

...THE YEAR OF THE GAME LORDS.



News & Reviews

GAMES NEWS Basil the burglar is having trouble with mutant bath bubbles in a long lost tomb! Meanwhile Quasimodo the infamous hunch-back is attempting to rescue the Fair

REVIEWS Jet-Pac scores another hit with our review team as the space-ace transfers to the Vic-20. We also take an exclusive look at Stonkers. the latest game from Imagine for the Spectrum

VIDEO-GAMING An exclusive interview with "Mr Pitfall", David Crane, Activision's ace games designer. Plus Professor Video

ARCADE ACTION We look at the latest laser-games, including Starblazer and Cliff Hanger, plus a preview of the eagerly awaited follow-up to Dragon's

Lair. NEXT MONTH 165

Listings



The feathered fiends are coming to take you away — unless you can avoid their talons! Action for Sharp MZ80K owners. Can you steer clear of these birds?

There's this giant beast chasing you through the forest and it's getting closer all the time. Animal magic for the Oric.

Our Game of the Month brings you an atom-powered challenge for the Spectrum. Can you stop the reactor going critical and beat the security systems and save the reactor?

PLANET QUARRK You are on a secret mission for the Intergalactic Federation when suddenly your ship malfunctions! Can you save yourself and your Commodore 64? SKIER

If you've been watching Ski Sunday on TV you'll need no prompting to program this listing into your Vic-20. ... 118

ALIEN ATTACK pace action for the Dragon 32.





REVERSI

construction team?

This game is one of the most popular board game conversions for computers. Now you can try your skill on your BBC

BRIKY Briky is a happy little bricklayer — until the moles and bombs appear! Can you help him finish his wall with your Atari

Santa brought you this

If you are looking for software for that new computer Christmas, then this issue of Computer and Video Games is the one for you! If you look carefully, you'll find a bumper 52 page Book of Games attached to the issue. It's packed with listings for all the top micros - and there are a few surprises among them, believe us! All that, plus the regular bundle of top games listings in the issue itself. What more could a micro owner want!

Bumper bundle!

What indeed! Well, how about a run down of the latest extra bits you can plug in or add on to your computer to make games playing more fun? Or perhaps you'd like to read the inside story of the origin of that lovable denizen of the arcades, Pacman? There's more from Japan too in this special feature

Features

MAILBAG Find out who won our awards
COMPETITIONS 21 Overseas readers — this page is for you! CHESS COMPUTERS 38

A look into the chequered world of chess-mates! BUG HUNTER Uncovers more gremlins in the works LOST IN THE JUNGLE 64

Part two of Frank Rooney's epic Adventure. What will they do next! ROGRAM EXTRA 149

How our listings work. Discover the origin of Pacman, Robert Schifreen looks at things you can plug in and add on. Garry Marshall on the 64.

ant editor Eugene Lacey, Editorial assistant Clare Edgeley, Reader services Robert Schifteen (01-270 3881), Art Editor Linda Freeman, Designer Lynda The Control Can of the American State Vision Control (Section Control Control

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Cover Bustration: David Rowe

Nest issue: February 190

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MODEM FOR THE DRAGON

In your December issue you stated you do not know of any modems currently

available for the Dragon 32. Not so! Microcomputer Resources Ltd manufacture a Prestel/Viewdata interface which will allow you to link

up to Micronet. Maplin Electronic Supplies also sell a RS232 interface kit which enables Dragon users to link up to virtually any viewdata system or even Maplin's own Cashtel system. S. C. Parnell, Benfleet. Feeny

BBC MICRO MYSTFRY

I own a BBC Model B and at the side of my micro's keyboard there is a hole which is covered with plastic. I know I am not telling you anything you don't know but along with a few of my friends who also own BBC micros I could not resist the temptation to push it in. When it came off, I found that instead of seeing an interface for the ROM cartridges. which I had expected to see. I saw over half of the loudspeaker overlapping from the position where it

should have been This mispositioning of the loudspeaker accounted for the coarse sound I had been getting even on a -15 setting. This was easily overcome by just taking the cover off and moving it slightly. But I still do not know what I set out to find in the first place so could you please tell me when the ROM cartridges will be available in the shops? Jason Dines. Billericay, Essex Editor's reply: At the

present moment there are no ROM cartridges available for the BBC Acornsoft are thought to be planning to release games cartridges some time in the future. As soon as they are out you'll be able to read about them in our Games News pages.

STOPPING THE VIC

Dear Sir, I am writing to enquire what POKE command can be used on the Vic-20 to stop the STOP key functioning. I have seen this used on cartridges for the Vic-20, as when the STOP key is pressed, which would normally break out of the program, the program will continue as normal. Andrew Griffiths.

W. Yorkshire Editor's reply: The run/stop - restore keys can be disabled with this line: POKE 808, PEEK (808)+2:POKE 37150, PEEK

(37150) AND 127: The keys can be turned on again with this line: POKE 808, PEEK (808) - 2:POKE 37150, PEEK (37150) OR 127.

POKEING THE ATARI

I own a 16k Atari 400 and recently I came across a few POKES, When I POKE 742.0 I discovered I now have 63k. Is that true? And also am I the first to discover that POKEing 703,4 into the memory gives a text window to GR0? Finally. the POKE which was published in December's issue was in the Atari Basic reference manual anyway! (Appendix 1-3). Michael Yick. Sowerby Bridge. W. Yorkshire. Editor's reply: Unfortunately, expanding

your Atari's memory is not so simple, or cheap. As you type in a Basic program, the amount of free memory goes down. The computer, therefore, keeps a counter in its memory with a value to tell it how

much memory is remaining So when you ask your machine how much free RAM you have, it simply looks at the value of this

You have probably guessed that part of this counter is at location 742. and what you are doing is altering this counter. This does not alter the amount of RAM, but alters the amount

which the machine THINKS that it has! If the machine thinks that it has more memory than it should, it will try to let you type in a larger program than allowed. This will then

cause a crash, probably erasing all your hard work. The only use for such a POKE command is to fool your friends into thinking that you've typed a 48k program in, in 10 minutes!

INTERFACE PUZZLE . . .

I will soon be purchasing a ZX Spectrum and am puzzled over which interface to buy with it. The interface module I'm after should be able to be used with most of the software for the Spectrum 48k i.e. most of the games from Ultimate, Imagine and Silversoft. Another factor to be taken into account is price. I would want it to cost about £15 to £20, maybe a little more. Please could you also recommend the best compatible joystick with price to be taken into

consideration R. I. Cosarove. Wrexham, Clwwd. Editor's reply: There are

around and all use different software. Most new

software will probably be written for the new Sinclair Interface 2 although the only one that works with all games would be a programmable Interface such as the AGF. One of the most popular joysticks is the Kempston Interface and iovstick, with a price of

around £30.00. WORRIED TEXAS . . .

Dear Sir. Recently, whilst browsing through the mags shelf of my local W. H. Smith, I noticed a computer magazine

screaming that Texas instruments are pulling out of the home computer market due to great financial losses.

Two questions - does this mean that TI will not be manufacturing any more cartridges, modules, ROMS (whatever you want to call them!) and secondly, does

this mean the price of printers, disc drives modems etc. will come down in price? The article says, "as many as half a million units could be sold off before Christmas for as little as £50 each." I, being a TI user, am worried

in case my machine goes wrong - will TI repair it? Paul Boakes, Rochester Kent Editor's reply: TI's

announcement that they are pulling out of the home computer market is bound to lead to slashed prices on hardware, software and peripherals. On the subject of

servicing, TI have promised to offer a service to all people who bought their machines. There is considerable pressure on them to keep this promise and keep faith with the public.

range of software

BLASTERMIN

seem to be just another version of a very popular game. How wrong can you be!!! True, the start is simple enough. The Spectrum picks a code of numbers or colours with a selection of levels of difficulty - and invites you to do the same. You then take it in turns to guess each others code from the clue supplied after each guess. An extrem ely well written, fast and very clearly displayed game, with almost inevitable defeat. This was exactly as intended but unfortunately something went wrong. During the programming strange uncomplimentary messages began to appear on the screen. At first they were so few they were not taken too seriously, but soon they could no longer oe ignored. Somehow the Spectrum had been given a

able, hateful, horrible mind

first glance this might SPECTRUM 48k £5.50



patible with the excellent Currah uSpeech unit - even worse!

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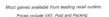
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QUALITY NOT QUANTITY?

Dear Sir,
I have recently heard people
criticising the GBS
Colecovision because of the
price of the games. These
propole are mostly Spectrum
as certain case of "quality not
quantity". The Coleco system
has by far the best graphics,
better than nearly all home
computers, and the games
are ones which gamers are
not likely to get bored with

quickly.

The software list will be enhanced by Activision, Parker and Imagic, the latter's games for Intellivision being starting, so the games for the Coleco should in theory be truly magnificent

when you consider the huge amount of built-in ROM. I feel that anyone who seriously wants arcade-type games at home should go for the CBS Colecovision. Should this letter be published, I feel it would put many Spectrum owners very firmly in their

place. Tom Stungo, Avlesbury,

REVIEWER RAPPED

Dear Sir,
I am writing to you because I
am disqusted with your
reviewer's views on the
Electron. I do realise that the
reviews are the opinion of
one person, but before he
makes any comparisons with
another machine he should
make sure he has all the
facts.

Firstly, I would like to know why in his review of the Acorn Electron he states that it's a superior machine to the Atan? The Electron cannot produce sound through the television like the Atan: It has only 16 colours and Atari has 285 with 128 displayed at any one time.

There are many more differences, which in my opinion make the Atari far superior. I am slightly biased, just like your reviewer seems to be towards the Electron and BBC machines.

MAILBAG

In the review on the 600XL and 800XL he states that the 600XL is 16k standard, but it can actually be expanded to 64k, and the 800XL comes with 64k. Both machines have 24k ROM and not 10k ROM

as stated.

I would also like to add
that one great advantage that
the Atari gives, is the
compatibility between the old
and new machines.

and new machines. Unfortunately, a lot of manufacturers (i.e. the Acom hatch and the factors which are two totally different machines requiring separate software), do not consider the users. Therefore, I thank Atari for enabling me to keep all my software library which has cost me over \$200 plus, when I unorrade to their laters.

I would just like to say that I would just like to say that I find your magazine excellent, but please review your reviews before you publish. Wrong information could easily mean the downfall of a good machine.

R. T. Green, Crumpsall, Manchester.

VECTREX ERRORS?

Dear Sir,
I recently purchased the
Vectrex computer games
system and have found a few
faults with two of its games,
Spike and Minestorm.

The instructions for Minestorm say that when you clear thirteen minefields you enter a new universe with space ships and space dust to contend with. So far I have cleared 24 minefields with no sign of a new universe at all. Is this a misprint in the bookler?

The second game Spike gives you alto to points if you move Molly's cage to the far left of the screen and jump for it. You lose a life but you can get a maximum of 65,000 points for doing this. Is this a fault or is it intended? J Hansford, Doncaster

SNOWFLAKES FOR ORIC

Dear Sir,
As it is approaching
Christmas and the colder
months, there will be some
snow (hopefully). But just in
case there isn't, here is a
program for Oric 1 owners. It
draws snowflakes and
develops into quite a nice
pattern when the screen fills

up. 10 PaperO-INK 7 20 HIRES 30 POKE #26A, 10 40 X = (RND(1)*200) +20 50 Y=(RND(1)*160)+20 60 P=(RND(1)*255-PATTERN

70 CURSET X,Y,1 80 T=(RND(1)*12)+2 90 FOR A=1 TO T:CIRCLE A FR

100 FB=INT (RND(1)*4) 110 NEXT A 120 GOTO 40 This program runs on a 48k

Oric. However, for the 16k version just miss out line 30. Chris Speight, Bedale.

SPECTRUM COMPILER

Dear Sir, Having recently started a course at university which involves computer programming with Pascal, I am interested in buying a Pascal compiler for my 48k Spectrum to help me with my studies. Please could you tell me where I could get one and how much it would cost? John Peden, Faufrousewhere

Scotland.
Editor's reply: The HiSoft
Pascal is available for the
48k Spectrum from HiSoft,
13 Gooseacre, Cheddington,
Leighton Buzzard,

Bedfordshire, LU7 OSR for £25.00.

STIX AND

STIX AND STONES . . .

Although we were pleased to see that our game Stix for the Commodore 64 was reviewed in your December issue there does seem to have been some confusion on the part of your reviewer.

The game concerns a struggle to contain an evil bundle of energy known as the Six so that its power can be harnessed for good rather than evil. Force fields must be built, using the "field synthesisers" provided. Each game starts with four.

game starts with four.

There are a number of hazards to avoid — the most dangerous of these is the Stix itself), and to quote from the instructions supplied with the rame.

"The second hazard results from a design fault in the field synthesisers (the manufacturers have promised to put it right in their next model, but that isn't going to help you now). If you pause for more than an instant while constructing a force field, the field stabiliser disengages sending a ripple of energy through the field that will destroy the synthesiser (unless you can complete the field before the ripple arrives). Listen out for the hissing sound that the ripple makes as it moves through

the field."

Unfortunately in the review this particular feature of the game is described as "a software design fault" and the reviewer finishes by saying that "Although the game was exciting to play I, feel this particular version will have to iron out its mentioned defects to become a games player's favourite". Defects?

I hope that this letter doesn't sound like sour grapes. We've had so many excellent reviews of Stix that we can handle the odd mediocre one. But to state that the program is being sold with a known fault in the software doesn't enhance our image, nor is it fair to the author, Andrew Trott.

Peter Calver
Supersoft,

Wealdstone, Middlesex.









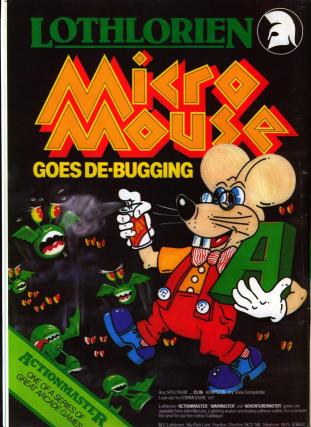
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CYLON ATTACK	/	/		
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You can all stop holding your breath now! The moment you've all been waiting for has arrived. Yes, we're ready to announce the winners of our Computer and Video Games

These are the awards that we hope will become a symbol of excellence in the software industry — a measure of a good software company and good pro-

We know that many software houses work hard producing top quality software and provide good after sales service to their customers

This is what Computer and Video Games es to reward by asking you, our read ers, to vote for your top game and favourite software house — among other

Since we first announced our Golden Joystick Awards several other award schemes have sprung up — but accept no substitutes, C&VG's joysticks truly reflect popular support for a game or software house because YOU have chosen the win-

Throughout the year the C&VG office has been flooded with nominations for our vo rious Golden Joystick Awards. A large variety of personal tastes and persona preferences came to light as we analysed the results - proving that one person's favourite game was another person's bowl of cold porridge!

Literally hundreds of games for all the popular micros were nominated. But despite the number of home computers on the market and the amount of software around - all our award winners were clearly head and shoulders

above their competitors. All the Golden Joystick Awards were presented at a special dinner held in London. Representa-

Sticks. We'll have a full report on the celebrations and the names of the winners in the next issue of

> Don't forget — if you missed your chance to vote in 1983 why not get in first for our 1984 Golden Joystick in the awards next year by filling in

the coupon we'll print in our next issue We're also keeping the names of our mers secret until next month too - but all will be revealed in our March issue Unless you are one of the lucky people ith an invitation to our grand awards dinner that is,

Remember we are also taking this opportunity to launch our search for the software stars of 1984. Competition is bound to be even tougher this year with more and more areat games on the market for the new generation of home computers — so we hope you'll help us make sure that the right people get our

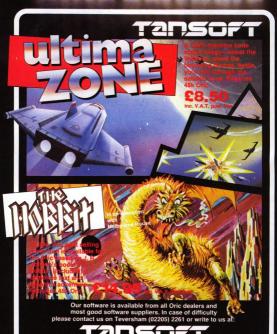
We pride ourselves on being the top reader friendly magazine — so that's by we let YOU, our readers, select the vinners. And this is why we feel that the C&VG Golden Joystick Awards are the only true reflection of what's best in the YOU, the games player, choose the winners! And who can know better what makes a good game?

Meanwhile, thanks for joining in the voting for our 1983 awards - and if you think we've missed out a cateaory for 1984 why don't you drop us a we're always open to sugges

There are a few surprises in the award -up - but we're keeping up the mystery al next issue! So don't forget to rush out on February 16th.



ORIC Software



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COMPETITION COMPETITION COMPET

TERRAHAWKS WINNERS!

Flaming Thunderbolts! When we announced our Terrahawks contest we never realised we'd start an invasion of letters and postcards which almost swamped the C&VG offices!

We had to call in Tiger Ninestien, Kate Kestrel, Zero and the rest of the Terrahawks team to help us get through the mounds of mail.

They managed to come up with two winners out of the pile and very soon Miss C. V. Gibson of Lancashire and Donald Glose from London will be the lucky owners of a Philips G7000 video games centre complete with Terrahawks cartridge! Your prizes are on their way.

POT THE BLACK

No sooner had we cleared the giant pile of Terrahawks mail another huge flood of competition entries swamped the office — this time it was Pot the Black which caused all the excitement!

We asked you to help Freddy Frinkle, the man with the Golden Cue, clinch the world snooker championship by solving an a-maze-ing snooker puzzle.

And hundreds of you took us at our word. After we called in a JCB earthmover to help us get through the mail, we finally managed to pick our 25 winners of Snooker games tapes, autographed by Snooker star Steve Davis and produced by new software house Visions.

We asked you to solve a maze and also if there could ever be a "break" of 162 in a game of snooker. And the answer is yes.

Here's how it works. Your opponent gives you a 195 start. You break off with a foul shot which gives your opponent four points, but leaves him smookered. He nominates a colour for red. pots that for I and black for I then socress 147—the he normal maximum break in snooker. He then wins the toes, pots the resported black making a total 'break' of 162. Simple whow!

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LEGGIT FOR MORE LEGGITS!

What's happened to all you eager Atari owners in the Portsmouth and Southampton areas?

We've still got some free Leggit tapes to give away, courtesy of Imagine Software and, to give everyone a fair chance — we've decided to go nation-

Would the wissers of the Assi Discount of the Assi Discount of the Assi Discount of the June of the June of CAVC, because of the June of CAVC, because of the June of CAVC, because of the June of CAVC, and the June of Turan's Osterations Protechnics competition featured in the November save been announced in the January Strissue would they please get in touch with Clare on the same telephone numbers.

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HANDS ACROSS THE WATER ...

You've probably noticed from our Mailbag pages that Computer and Video Games refreshes the parts of the world that other computer magazines just can't reach. And recently a few of our oversear readers have been asking for a competition which runs for a bit longer than just a month to give them a chance to enter. Many of our oversear maders don't

get their issue of C&VG until well after the rest of you — simply because of the vast distances involved. So we've decided to run a competition just for them. OK overseas C&VG fans here's what

OK overseas C&VG fans here's what we want you to do. Send us a good games program — that's all. We know there must be offered to the same writers with the same with the same with the same and the same with the same as original as possible — that's our usual plea to programmers — but we're always interested in a top quality conversion of an arcade favourties or computer game.

We've got three Sinclair Spectrum computers up for grabs, plus some soft-ware from C&VC's vaulis thrown in, for the top three programs selected by our team of reviewers. Runners-up will receive Computer and Video Games Year Books and The Champ t-shirts.

The winning programs will be pub-

The winding programs will be placed young to program a Game of the Month. All the programs we receive will be every program a Game of the Month. All the programs we receive will be sold-dered for publication. The closing date of the competition is july 16h 1684—8 about a program and get your entry of the programs and get your entry of the programs and get your entry of the programs and get your entry of clares. Overseas Readers Competition Clares, Overseas Readers Readers Readers Readers Readers Readers Readers Readers Read

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Urban Upstart is an adventure set in a present day inner city area called Scarthorpe. "A town so tough that even the dogs carry flick knives. The sort of town where rebuilding means a coat of paint and where people queue up to queue up for a job." Or so says the advertising blurb at any rate

You play the part of a streetwise kid who's trying to escape the horrors of violence and deprivation in Scarthorpe, but escaping from the town is no easy task. Crazed muggers and corrupt policemen lurk around every street corner. Every location has a graphic display of the scene, ranging from a hospital to a building site.

If the secret police get too much, you can always save a game on tape and put your baseball bat down and have a rest. The game runs on a 48K Spectrum and is available from Richard Shepherd Software at an

GOOD NEWS **FOR NEW** WILLY FANS! MINER WILLY

asking price of £6.50

Byte's top selling Manic Miner, is shortly to be starring in a version of the game for the 64.

The game has been taken over by a new company set up by Matthew Smith - the author of the Spectrum version. His Software Projects company will now be marketing the game

When the 64 version goes on sale, Software Projects will be fact a very sophisticated com-

announcing details of a competition, with a super prize for the first person to complete all the levels of the game

Conversions from Spectrum to 64 are proving to be some of the most successful - and Software Projects are confident that the Commodore version of Miner Willy's adventures retains all the features of the Spectrum version. Further good news for Willy

fans is that the latest word coming out of Livernool is that Manic Miner Part II is well into produc-

it allows you to enter your game ideas in plain English words which it then miraculously comniles into machine code instruc-The makers of the game stress

that Scope was specifically designed as a graphics language to create games comparable with professionally produced software! Even the youngest of chil-

dren can use it with ease. Scope is produced by Interactive Software for the Commodore

piler. The beauty of Scope is that minute picking up valuable crowns, jewel-encrusted swords and precious stones before he has to leave the maze Time isn't the only thing

against Burglar Basil - bouncing bubble monsters attack Basil from all sides. You must help Basil to avoid being drowned in the suds and collect as much of the tomb's treasure as you can.

The game has three different levels of difficulties, fifty different mazes, fine scrolling graphics and sound effects and is available from Arcade Software for the ZX Spectrum 48k for £5.50.



SCOPE FOR ARCADE

If you like the sound of writing fast arcade games without the slightest knowledge of machine code then read on

Scope is a new, simple graphics programming language available for the Commodore 64 The game, its makers claim, is designed for writing fast arcadestyle games without headaches.

SCOPE stands for Simple Comnilation of Plain English, which gives a clue to why the programs run so fast. The program is in

BASIL AND THE BUBBLE MONSTERS BUBBLE TROUBLE

Bubble Trouble will have you foaming at the mouth as you

battle against mutant bath bubbles in a new game for the ZX Spectrum The game puts you in the iped shirt of Basil the Burglar,

a small time crook who's taking his chances against the infamous bubble monsters guarding an ancient, treasure-filled tomb.

to choose from, but he can only £6.50.

MSDAY CASTLE

Saving the universe is neve easy, especially when your adversaries include the phenomenally nasty Googly Bird. The Gongly Bird is one of the many galactic ohouls you'll meet in Doomsday Castle, a new real time graphical adventure game for the ZX Spectrum.

The hero of the game is Ziggy - remember him from Fantasy's other smash hit game, the Pyra-

Doomsday Castle is set in a universe ruled by Scarthax, the most evil being in the galaxy's history. Scarthax has searched the universe and collected the six ancient stones of life force. Now that he has brought them together under his control, he wields a power for evil far greater than the most horrifying nightmare could imagine.

The stones' awesome power is sending waves of corruption to every corner of the cosmos. Your task is to guide Ziggy through the Doomsday castle, attempt to wrest the stones away from Scarthax, and turn their power against their former master

Doomsday Castle runs on a 48K Spectrum and is available Basil has over fifty labyrinths from Fantasy Software costing

DUNGEONS IN DANGER ON ORIC?

RUNFLORD

Hardened D&D addicts may look down their noses at 'upstart' a new game, Runelord, may the Oric 1 and costs £7.50.

game. This way a whole library of different roles can be made.

Runelard, like its board game namesake, is set in Celtic Britain. From here on the usual Dungeons and Dragons' tactics of murder arson and the odd bit of pillage take over. It sounds like

Runelord is available from computer adventure games. But Modular Concept Peripherals for

new life to the name. The action takes place over

four screens of map with two opposing armies of heavy tank divisions, light tank divisions and mine laving infantry, battling for supremacy over a landscape of mountains, rivers, forest and field

It's a game for two players or one player against the computer and can provide a simple 30 minute onslaught as both sides rush to take the opposing capital,

or it can be as tactical as chess. The landscape offers different advantages to infantry and tanks and a good commander can use the lie of the land to boost his

Kriegspiel, available from Beyond Software, costs £6.95 for the Dragon 32 and can be played by keyboard or joystick

FIRST OF FELIX IN THE **FACTORY**

All those who received an Electron for Christmas won't he frustrated by a lack of games software in the New Year. Most home computers in the

past have been plaqued with a dead area' for a few months after their launch, before the independent software houses got their acts together and started producing games in bulk

But it looks like Electron owners, problems won't be finding software for their computer, but choosing between the games that are about to flood the mar-

Two companies who are leading the way in Electron software are Acornsoft, the software division of Acorn computers, and Program Power, a company that specialises in BBC software.

Program Power have released range of ten games for the Electron including conversions of some of their most sucessful BBC games like the best selling

The company haven't stuck to just converting old games but have some original titles up their

Felix in the Factory is the first in a series of Felix adventures that Program Power are planning. The game places you in the position of the industrious Felix who is in charge of a run down factory for the weekend.

The rusty old generator in the basement of the factory keeps running out of fuel and you have to help Felix refill it with fuel before the entire factory grinds to a halt and production stops.

Felix must negotiate the rickety old ladders and conveyer belts to reach the generator, but his progress is slowed by gremlins who inhabit the building when the workers have gone

Felix's only hope of getting past them is to find a pitchfork and knock the nasty gremlins off the gangway and stop them putting a spanner in the works.

Another hazard is the giant rat that scurries across the packages in the factory's corners. The only way to get rid of the rabid rodent is to jump up and grab the bag of poison hanging from the ceiling. Felix in the Factory is available from Leedsbased Program Power for the new Electron and is priced £7.95.



posed superiority.

Runelord is based on the role playing fantasy game of the same name and it differs from most computer adventures in allowing you to develop certain characteristics of your chosen role. As in Dungeons and Dragons, each character has different quotas of wisdom, strength and dexterity. Runelard lets you create these for yourself, each one having its own particular strengths and weaknesses, good points and had points Furthermore, the game doesn't just consider aspects of the player's personality, but also how much equipment and experience each one has acquired during their 'lifetime'

Once a role has been created - a warrior or magic user for instance - it can be saved on

HERE IS THE WFATHFR **FORECAST**

vital part of military tactics for the commanders of tank warfare game Kriegspiel. An autumn offensive can suddenly grind to a halt as the landscape disappears below a blanket of snow or floods make waterways impass-Kriegspiel was first written by

Ron Potkin on the Tandy TRS-80 in the late 70s and this early version even appeared in Comouter & Video Games, Now Ron has utilised machine code and the Dragon's colours to bring



G-A-M-E-S N-E-W-S

QUASI WILL GIVE YOU THE HUMP!

It's a few centuries since the legendary Quasimodo first attempted to save the fair Esmaralda, and carry her off to the sanctuary of the Notre Dame's famous castle tower

But the hunchback has swung right back into the thick of the action. Notre Dame's booming chimes will ring out again as the world's best known bell ringer hits your TV screen in the unlike-

ly quise of a video game hero. Quasimodo's task is the same as ever, to save the heautiful Esmaralda from the clutches of the evil Archbishop and his cronies.

You must help the unfortunate cripple jump flaming barrels, swing across murky pits and avoid loyal knights ready to thrust a lance into Quasi's hun-

ched shoulders. The game is played against a scrolling background of the cathedral. Each level consists of 15 screenfuls of high speed action and is piled with more and more difficult obstacles for Quasimodo to overcome before

he reaches his true love Hunchback is a direct copy of the original arcade game of the same name and has been produced with full co-operation of the game's original manufacturers Century Electronics. It's the only official version available on

any home computer. Hunchback is available for the Sinclair Spectrum, Dragon 32, Commodore 64 and Oric computers in late December from the

Manchester company, Ocean

air ballooning. He has decided to go on a marathon flight to test out the brand new balloon he has iust acquired

Like all great heroes Nathan Wigglesworth would never think of embarking on a trip of a lifetime without the help of a life long pal T. C. Barton.



WHEN THE BALLOON GOFS UP

CRAZY BALLOON

Around the world in 64k? Crazy Balloon certainly seems to make it possible on the Commodore 64. Crazy Balloon takes you back to the age of romantic adventure where the sky's your limit and

The game places you in the shoes of Nathan Wigglesworth, an eccentric explorer whose

Like Nathan, T.C. enjoys a great adventure and is quickly ready to take off with his old pal. As Nathan and T.C. start their sojourn, the weather report-is good but many obstacles lie in the way of the chums' expedition. You must help them manoeuvre the balloon over churches and skyscrapers.

Twenty-six dangerous flight levels have to be completed before the two can claim the title of the World's Greatest Aeronauts.

Crazy Balloon is available for the Commodore 64 and is joystick compatible. The game is produced by the newly formed com pany Software Projects and costs £7.95.

JOIN THE CLUB AND WIN A BADGE

America's top independent vider game manufacturer, Activision, have just released versions of two of their most successful games for the Atari 400/800

River Raid is a super fast, all action, scrolling shoot-'em-up. You are flying a mission up river to destroy all enemy shipping and bridges in hostile terrain. Activision will reward anyone who can score a million points with a River Raiders Club badge. Also converted for the Atari

home computers is the hit VCS game Kaboom. This challenges you to catch all the hombs being hurled by the mad bomber before they hit the ground and explode.

The games are in the shops now at £29.95

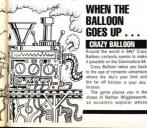
MERCENARY SAVES THE GAI AXYI NEOCI YPS

The galaxy is facing the most dire crisis in its history. Neoclyps, a remote planet and a member of the Colonial Federation has been invaded. As the universe's foremost galactic mercenary, you must liberate the inhabitants of Neoclyps from the alien dictators

The invaders have set up a defence system of radar towers to detect any ships entering the planet's atmosphere. Your ship has been designed to withstand 12 collisions with the towers or with aggressive alien guards.

The game is written in a 100% machine code and includes a joystick option.

Neoclyps is available from Coventry-based PSS for the Commodore 64 and costs £7.95.



The No.1 **FootballGam**



Football Manager

Designed by Kevin Toms This outstanding game of skill and strategy is now widely available and you can join the many thousands of satisfied customers who have purchased the game. This is no five minute wonderyou will be playing this game for hours over many weeks (we know - our customers tell us!)



Some of the features of the game:-

 Matches in 3D graphics * Transfer market
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 Injury problems * Full league tables * Four Divisions * Pick your own team for each match

- * As many seasons as
 - vou like
 - ★ Managerial rating★ 7 skill levels
 - * Save game facility

's my own fault you did wam me - I an

Your FOOTBALL MANAGER game is emific." (Mr. N. Cumming – West







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Addictive Games

R-E-V-I-E-W-S







STONKERS

SHAMUS







JET PAC



ATIC ATAC

Our Game of the Month this issue is Alic Atac the latest game from Ultimate, which is rapidly gaining cult status among games players everywhere. Read our view of this interesting adventure style challenge on page 31. Another of Ultimate's best games was Jet Pac — find out if that winning sames was Jet Pac — find out if that winning to Vic-20 on page 29. Do you like war games or strategy games? Then turn to page 32 where you'll

find our review of Stonkers, a tank game with a difference. We also look at the latest offering from new software company, Beyond. It's a maze style adventure for the Atari with some stunning ordering graphics. But what about the game? Find out the stand of the standard of the standard



- "My Terry wouldn't do a thing like that."
- ...Terry's mum

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RABBITSOFTWARE LID

OF HERE!

Brilliant on Spectrum, VIC-20 & CBM-64.

IMPRESSIVE ALL ACTION

FOUR GATES

If you're after a good game for that Vic you got for Christmas then this is certainly worth a

Four Gates to Freedom is another in the Action/Adventure series from Phoenix software The game comes on two separate cassettes with an arcadetype action game on one and an adventure on the other

The catch is that you need a password to load the adventure. and you can only get this by reaching the highest level on the action game!

The action part of Four Gates is impressive. There is a wall at the top of the screen which is built in five-bar gate fashion. Above that is another wall, and beyond that are the four gates to

The idea is to break through both walls in Breakout style. avoiding aliens and also the falling debris from the wall

Between the two walls lurks an extra meany, so the game gets harder after you've created a gap in the first barrier, as he escapes through the hole. He cannot be destroyed with your

The action in the game is very fast. If your trigger finger can handle it, you can fire quite a few times a second

The graphics are not superb. but are adequate for the game. Overall, it's great and very fast. But it may take some time. not to mention eye strain, to reach the highest level and get the password for the adventure.

Once you have the password no I didn't finish the action but I've got friends at Phoenix - you can load the adventure

When it has loaded and the password has been entered, the title screen welcomes you and challenges you to 'solve' the adventure! You'd think that they could check the spelling.

You start off outside a metal gate and your only exit is South. Problem is that you need a password to get through the exit, which I hadn't been given.

Not only do you get the loading code from the action game, you also get quite a few clues flashed on the screen during play. One of these, I assume, is the password to get through the gate



If you'd like to try this for used to paralyse an enemy temyourself, you'll need a Vic with a 16k Ram pack, Phoenix Software is based in Pinner - you'll pay £9.95 for the twin-pack, which

 Getting started Graphics Playability Value

PARALYSED BY PEPPERI

10

AR WIMPY

If you think that a game called Mr Wimpy must mean another version of Burgertime, then you're not wrong. But you're not exactly right, either

The opening screen is original and quite good, but the remaining frames are just another version of Rurnertime

The first task in the game involves moving the ingredients from one side of the screen to another. You have to collect a tray and gather the cheese, ham and bun while avoiding Waldo the burger thief, and a group of flying manhole covers. No, I don't

get it either! Once you've gathered all the bits and pieces you get to the other screen, which is a pretty accurate copy of the Burgertime theme. The chef is replaced by Mr Wimpy, the logo used in their advertising. You are pursued by an egg, spoon and a sausage and you still have your supply of

The original Burgertime was written by Data East and was licensed for home use by Mattel, who produced a cartridge for the

peoper.

The object is to build up the burgers at the bottom of the screen by walking over the ingredients so that they fall down a level.

If you pick up the ice cream or the cup of coffee then you get up and down while "." and "." extra shakes of pepper, which is move left and right. The "M" key

Burgertime is the same game, whatever you call it. But this is probably the best version around for the Spectrum

It runs on a 48k machine and is available from Ocean Software for £5.90. It's a shame that they couldn't call it by its real name.

8

8

8

Getting started Graphics ● Value Playability

CRACK SHOT CLONES!

CYBERTRON

Searching a derelict castle for treasures is brought up-to-date with this program. Before entering each level of

the castle, you are told which treasures you must look for and you then wander round the 16 rooms in search of them. As you pass over the treasure, it will appear at the bottom of the screen to remind you that it has

Once you have all the loot, you then have to find the room with the safe in it. Touching the safe will lock away all the treasure and you are then moved up to the

Obviously in such a game there will be enemies after your blood. On level one, says the inlay card, your only adversaries are the Spinners. Personally, I can't see what's wrong with them. (Did you see their Christmas show?) On higher levels, you are also pestered by Clones and Cyber droids. These have more person-seeking intelligence and

can also fire pretty fast! Control is via the keyboard or joystick, but the keys were not laid out too well. A and Z move

is used to fire, which I found to be too close to left and right. A joystick would have solved this problem. Furthermore, the break and escape keys are not disabled, as I managed to crash the program by pressing them.

Trying to re-run the program I typed OLD. I was amazed to find that my job was then made unnecessary, as the program reviewed itself. Up came the words 'Bad Program"! To be fair, though, the game is quite well written. I enjoyed playing it, but I don't think that I'd come back to it too often.

Cybertron Mission runs on a BBC B and comes from Program Power, It'll cost you £7.95.

8

8

 Getting Started Graphics Value Playability

VICTORY FOR VIC VERSION

JETPAC

One of the best selling arcade game titles for the Spectrum has now been released for the Vic.

Jet Pac brought fame to Ultimate, a small company whose first release became an instant success and the Vic version is just as good.

As the person in charge of the Acme interstellar transport company, your job is to assemble your rocket and then to load enough fuel to let it take off. On reaching the next planet, you must fill up again. After four screens, you must rebuild the The Spectrum version had 16

screens before they started to repeat but, the Vic game has just eight. Because Ultimate wants everyone to have an equal chance at finishing the game, the

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comes in two cassettes at the price you would normally pay for one. But do not let the low price put you off, DYNAMIC GRAPHICS is by far the most unique and much needed software aid on the market today.





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continued from page 29

Vic one runs slightly faster than the ZX.

The Vic will accept standard Atari-type joysticks, and these can be used in the game, although the keyboard can be used instead. What's more, the superb graphics of the Spectrum version have been captured in the same detail on the Commodore machine and the screen is one of the best that I have seen

— all in 8K, too.
One talked-about problem from the Spectrum was the so-called bug in screen four. This, says Ullimate, was deliberate to allow poor jaleyers to achieve a high score. Anyway, that problem desert trass now, as that screen was one of those which was removed for the Vic. So it was removed for the Vic. So it was removed for the Vic. So it be poor players than Vic owners!
A great game for one or two players, and well worth £5.50.

- Getting started 9
 Graphics 9
 Value 9
 Playability 9
- FIGHTING FATAL FUNGUS

SS ACHILLES

You'll have to race against time to save your planet's most valued artifacts from the doomed star cruiser SS Achilles. The SS Achilles has been attacked by a strange space fungus which is slowly eating its way through the ship's maze of corridors.

The alien intruder is indestructible and your only hope of saving your culture's most treasured relics is colow its progress through the ship, to give you enough time to escape through

the shuttle craft with your cargo

to earth.

The game starts by showing a very impressive graphic display of SS Achilles under which the game prompts the player to choose one of five difficulty levels, ranging from inept to ex-

You are placed inside an android protection suit to help you survive the harsh environmental conditions in the ship, Moving the droid into the walls or any grey object damages the robot's integrity level, shown at the bottom of the screen, together with the droid's remaining power supply. The level of

ing power supply. The level of the droid's integrity becomes more and more important as the game progresses and a lot of skill is needed to move the robot around the ship without hitting the walls or running into the

fungus.

The growth of the fungus can be viewed by stepping into one of the tele-screens scattered

of the tele-screens scattered around Achilles. This prints up a map of the ship's interior, showing the areas inhabited by the alien in orange.

To complete the game, you must pick up all the objects lying around the ship and deposit them in the shuttles loading by. There are lour different types, but the droid can only carry one particular object at a time. If and when you've collected all the objects, you can abandon the ship in the escape shuttle. SS Achilles is a very addictive

and challenging game. The graphics are good and the animation is amongst the best I have seen on the Atari. My only criticism of SS Achilles is that the game is only available on

SS Achilles is available from Beyond Software for the Atari 400/800 and costs £19.95.

Getting Started 8
Graphics 8
Value 6
Playability 8

ASTRAL PLAIN

ACTION!

DEFENSE FORCE it's all action on the Gric as you career through space with lasers

blazing in an attempt to save the humans from an alien invasion. Attack! The humans are being captured! A Vultura rapilly descends on its prey with the aim of carrying him off into space. Waking a rapid about-turn, out lip back in the opposite direction and blast the alien to the four corners of the galaxy. Luckly the humanoid is untharmed and falls

gently back to earth.

Shoot-em-up fans will love Defense Force — with only a few variations, it's a faithful reproduction of the fast-moving, ac-

tion-packed orcade hit Defender. The aim of the game is to get through 20 waves of aliens and prevent the humans from being kidnapped. With up to 16 different video nasties on your tail, life becomes pretty hectic and you'll find that being able to fly both backwards and forwards a useful addition to the game.

Once all the humans have been captured, you enter the Astral Plain and best with vicious nasties, your only chance of survival is to fight it out. Graphically very impressive, the Astral Plain gives the impression of flying into the depths of space away from the TV.

With the aid of a Star Map, it's possible to spot the swarms of aliens approaching before a beginning before a beginning before or so be prepared for screen—so be prepared for waves of Assassins, Quantums and the dreaded Cybotroids if you don't want to lose a life, However if the pace becomes too much, a force field can be enercted which will remain operational for six seconds—enough time to five outside the company of the

of trouble!

There is an on/off sound function which I found especially

useful — for although the sound effects are great, they are really noisy and had me clapping my hands to my ears in horror. Thankfully it's possible to play a silent game with just as much fun. A beginners' option is also available for the absolute learner, but this soon becomes borinn

With its excellent graphics, Defense Force will bring hours of fun to the lives of trigger-happy arcade fans who want a fast game for their Oric. Defense Force is available

from Cambridge-based Tansoft and costs £7.95.

Getting Started 7
Graphics 8
Value 8
Playability 9

YOU'LL BE HAUNTED BY ATIC!

ATIC ATAC

Abandoned in the eerie, haunted castle you can only escape by finding the Golden Key.

The castle consists of a large number of rooms, each of which has between one and three doors. As you walk across a room and through a door, the screen clears and the new location is drawn. The program runs very fast and there is no delay while the redrawing takes place.

The quality of the graphics in this game is the best I've seen from a Spectrum. Ultimate has dispensed with some of the movement and sound routines which were shared by Jet Pac and Cookie, and have written

some excellent replacements.

Movement is smooth, and user defined graphics are used to their limit to produce some amazing characters such as evil-looking witches complete with broomstick.

Control is via Kempston or AGF joysticks, or the four cursor keys. With four keys for direction, one to fire and one to pick up the objects, a joystick is really the only way to play.

As I said, the idea is to explore the rooms, collecting the objects and using them. For example, some doors may be locked and to open them you'll have to find the correct colour-coded key.

Scores are printed on a beautifully designed "parchment" scroll which runs down

continued on page 32

continued from page 31

the right hand side of the screen. This shows the number of lives left, and also a large stuffed turkey! If you come into contact with any of the nasties, the turkey sheds some of its meat and gradually turns to a pile of bones. When all the meat's gone, you lose a life! Now that's novel.

Apart from the keyboard control, Atic Atac must rate as the best yet from Ultimate. It runs on a 48k Spectrum and is well worth the £5.50 which you'll have to

q

10

9

 Getting started Graphics Value Playability

WARSHIPS OF GOR

ACHERON'S RAGE

If you're a fan of Asternids then you'll probably like this version of the game for the Oric

You've hyperspaced, says the cassette inlay, into a sector where scanners revealed no sentient life-forms. Suddenly . . . warships of the Gor are materialising all around you. In reality, though, it's an asteroids-

type game. The playing area consists of the whole screen, apart from a thin border and also a large shaded block in the middle. On the screen is your shin and a number of aliens, or Gor ships as Softek likes to call them. The idea is to destroy all of the Gor ships and then to move on to the next level. The block in the mid-most difficult stunts of his short dle of the screen makes man-

oeuvring quite difficult, though There are three types of Gor ships. Some will try to ram you. some have the power to fire back, while others will lay mines. Running over one of these will result in your destruction There are four skill levels in

the game. Even on level one I thought that the playing area was too small - there's just not enough room with all those aliens to manoeuvre your ship. You get three lives to start, and

Control of the game is via the keyboard. There are five main controls - to rotate in two directions, fire, accelerate and brake - but you can't move and fire at the same time so a joystick option would be useful



This is certainly not the best game that I've seen for the Oric. although the graphics are quite good in places. The Gor ships move very smoothly and flan their wings, but the player's ship rotates badly in large steps.

Sound effects are included, but are quite limited. There's one sound for firing and another for when the player's ship is destroyed. It's quite loud and there's

no volume control, but you can turn it off completely if you want. If you like this sort of game. then this is worth the money, but it's not one that I'd come back to very often. Acheron's Rage runs

on a 48k Oric and costs £6.95. Getting Started Graphics Value Playability

BOUNCING POLICEMEN?

DARFDEVII DEN Dennis the Menace, the famous movie stuntman revs up his trials bike as he gets ready for the

Unfortunately for Daredevil Dennis the film director won't tolerate failure, so if he fails more than three times at any stunt he's fired - which is probably just as well as poor old Dennis lands on his head each time he falls off and is probably suffering from severe brain dam-

age!

There are six screens altogether. Dennis starts off by leaping houses and trees on the first screen and moves quickly an extra one after clearing every onto water where he rides a wet-bike. The snow slopes are next - slightly more difficult as they are very slippery - with the remaining three featuring lowflying helicopters and gaps in the road. Your jumps have to be well timed if you want to save Dennis from going up in flames

The first three screens are easily mastered on the first difficulty level, while the remaining five levels range from Experienced to Ace where you'll really have to struggle to keep Dennis on his bike. I had several nasty encounters with bouncing policemen and decided to stay

A lively tune is played which livens up the dreary few minutes while the game is loading and the graphics are very detailed and colourful. However, I felt the game lacked that elusive addictive quality which would make it

on the novice level!

The game is controlled by the shift key which acts as a throttle. the return key which acts as the brake and the space bar which is used for jumping - very simplis-6 tic controls and a game better suited to the younger age

Daredevil Dennis is available from London-based Visions for the BBC Model B at £7.95

 Getting Started Graphics Value Playability

WAYS TO WIN THE WAR!

STONKERS

Golly, chaps. Spiffing game. what? These Imagine chappies have really got it right this time. Yes, it's the latest release from Imagine. In one giant leap for a software house. Eugene and Co. have released a war-type strategy game but have kent those pretty arcade type graphics. Those graphics are, in fact, well designed. But I don't think they really live up to Imagine's claim that they are as much as is technically possible on the machine. For my money I prefer Ultimate, Whoops, sorry!

Anyway, chaps, this is a war

strategy game. There are no fast moving meanies to zap; instead you have to move your tanks and cannons to clever positions and make sure that you are near enough to the supply ship to get

some cargo when it unloads. If all this sounds very vague and I seem to give the impress ion that I couldn't get in to the game very far, then you're right The whole idea is pretty complicated and I actually spent the best part of a whole day studying the instructions in front of a Spectrum. For all my gallant efforts, I succeeded in drowning

my entire regiment in the sea. When opposing forces meet, whether by clever deployment or by accident, they will engage in combat. There's a predetermined hierarchy of which battalions are more powerful than others. Your forces will change colour it

they're engaged in combat. During play, the screen shows the playing area on a small scale. There's a 2-character wide cursor which you can move to any point and then expand that 2character piece to fill the whole screen. It's really quite impressive. Anything which happens to be moving will do so whether you happen to be there watching or

not The object is to destroy the enemy positions and to occupy their HQ. But I feel that this is going to take someone a long time. If you're the sort of person who likes to be able to get straight into a game once it's

loaded, then this is not for you. However, if you're fed up with zapping everything in sight from Space Invaders to Mutant Telephones and man-eating toilets then this will be good value.

Stonkers is from Imagine and runs on a 48K Spectrum. It costs

 Getting Started 8 Graphics Value 8 Playability



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Thinking of buying a chess program for your micro? Don't know what to expect or which one to buy? Then read on . . . Whether you're a chess fanatic or you just know the rules, you will probably at some time want to set a chess program for your home computer. With the great number of programs now available, it may be a difficult decision to choose the best one for your micro. In this article Chess programmer Martin Bryant looks at the standard of play and the features you can expect from the best modern home computer chess programs.



Standard of play

The very best programs can now play at a fairly good clab level, from around 1800 to 1800 ELO (128 to 150 BCF). The standard of play can way greatly from game to game depending on the type of the game. Modern programs also usually have a much fuller understanding of the more obscure rules of chess such as underpromotions, draws by repetition, draws by the fifty move rule and chess clocks.



Features

Here's what you should look for in a good chess program. The most recent programs are provided with many more features of a much higher quality than their older counterparts, such as:

■ Move entry by a cursor positioning method. Why should people have to turn their thoughts into an appebraic form, just because its easier for the program to understand? The cursor method allows you to 'move' the piece on the board, more like a real chess game. The best programs can accept both methods.

COMPUTER CHI

The ability to step backwards or forwards through the entire game. Older programs would allow you to take back only a couple of moves, but with new techniques the whole game record can be stored and scanned with small memory overhead.

ory overnead.

The oreintation of the board should be reversible. That is the board should be displayable with white or black at the bottom of the screen. This allows you to play black "up" the board, like a real chess game, instead of having to reverse your way of looking at it.

Several "modes" of play can add a great deal of flexibility to a program. The old fashioned eight "levels" can be vastly improved upon these days. Some

of the sensible modes 'are (o' Tournament' mode: Pall tournament parameters can be set up, to make the program play within any specified time limit. An easy to use version of the full mode is helphil as well, where you can just specify the average more time you with the program to take. This can range from one second to 39 hours, deflectively providing thousands of deflectively providing thousands of justs its "Op program something within the required time for the control of program something of program something of program within the required time for program within the required time for program something or program within the required time for program something or program of program something or program of pr

(ii) "All the moves" mode: Chess clocks are used, where you must play all the moves of the game within a specified game time. If you play too slowly, you lose on time! Club players often use this method in "five-minute" games where both players have five minutes each to play all their moves.

(iii) Problem' mode: The ability to solve chess problems of the type in many newspapers is good. Beware however of the programs which claim they can solve mates in five or more, but then take a week or so to do it! If the program averages more than a few seconds on any mate in two it is likely to be horribly slow on deeper mates. (iv) 'Losjoig' and 'Ernal' modes: Many players can't beat the programs on their lowest settings. These modes allow the program to quite deliberately try not to wint Instead it either tries to gradually lose or stay roughly level. These modes can be of enormous help to the beginner or very weak player. As the player improves, the program magically improves with him, always challenging him, but not totally smashing him so he isst drives us.

The ability to quickly and easily set up different positions is essential. The program should also check that you don't try to play on with an illegal board position. For example, having Ps on the first rank, more than one king for each side setc.



The best programs for playing strength are usually the most recently released. Any program which has been around for over a year without an update, is probably totally outdated as far as its playing strength goes. A year is a long time in computer chess, as can be seen from the results of programs which

compete in recognised tournaments, such as the European Championships at the PCW show each year.

A chess programmer may achieve glory one year, but has to work very hard on new ideas/techniques to improve the program, so as not to be leapfrogged by other programs by the

following year.
You should try to go for recognised quality programs, which have competed in many tournaments. There are several reasons for this. Some of the programs have obviously proved themselves by actually winning some of

these tournaments.

Others will have at least performed reasonably well. The ones that don't enter at all, would probably be smashed out of sight! Also the programmers behind these programs are dedicated and



QUE-MATES

knowledgeable enough to really write a quality program, rather than just another software "rip-off" as are many chess programs. The same arguments really apply to the features as well. A "real" chess program will have most of the best features as a matter of course.



I'll now take a brief look at two programs which are probably the best available. They are White-Knight Mark II for the BBC Micro and Cyrus IS. Chess for the Spectrum.

Cyrus was originally written in 1981 by Richard Lang and won the European Championships in the same year. It has competed in several tournaments since. with varying success and has been

adapted for several micros. The Spectrum model is not the latest version of the program, but can still beat almost all other programs. It comes in 16k and 48k versions. The 48k version has more features and also uses an openings book. It contains a wide range of features, including set-up position, saving to tape, printer output and full game take-back. The bottom of the screen shows the various features available as single letter commands.

The display is clear and the programs cursor move entry easy to use. It allows user underpromotions, understands draws by the fifty move rule and some draws by repetition. It has eight levels and can solve problems up to three moves ahead.

White-Knight was originally written in 1977. Mark II won the home computer section of the European Championships in 1983. It is certainly the strongest home computer program available at the moment.

It runs on the BBC model B and like Cyrus, comes with several excellent features, including set up position, whole game takeback/replay, orientation, play-self, blindfold and even volume control

When it computes its move, it displays the best line it has found so far in its search. This can be used to provide a "hint" move as well as an indication as to what "White-Knight has "seen". Again the display is very clear and the program easy to use. You can use cursor positioning move entry or algebraic

The program can easily be set to play within any average move time you require of it, thus providing thousands of potential "levels". It can also solve mates up to five moves ahead. Its problem solving speed is phenomenal. It examines around 1.200 positions each second and when compared to the Program Power chess program was found to be around 200 (yes, two hundred) times as fast!

It was recently used in a study of several hundred chess problems and found that a dozen of the original problems were in fact in error!

In a series of sixteen test games between the two programs on various levels. White-Knight beat Cyrus I.S. Chess by twelve games to four.

For other micros there is a wide range from fairly good to appalling programs. Cyrus is also available on the Dragon. Not as good as the Spectrum version but still a good buy. White-Knight is soon to be released on the Electron.

The Atari cartridge I tried was horrible and at £25 has got to be one to miss. For the Commodore 64 comes the Grand-Master. It didn't offer many real features and I beat it twice with no real trouble and wasn't very impressed. At £15 I would also give it a a miss

A new program called Collosus. which won second amateur prize at the European Championships is soon to be released on the CBM 64 and Atari micros. This program promises to be one of the best around. For the Apple, Sargon 2 has had its day, but Sargon 3 is now available.



COMPUTER CHESS COMPETITION

BBC Publishers are offering a super prize to the lucky winners of our Computer Class Competition - three presentation copies of White-Knight, autographed by the author.

All you have to do is answer the following questions about computer chess. So have a go at winning yourself one of the best chess programs around! (1) What was the name of the computer

chess program which won the first Computer World Chess Championships in 1974? Was it: (a) CHAOS (b) KAISSA (c) CHESS 4.0 or

(d) OSTRICH? (2) What processor did the original

Cyrus program run on? (3) Which program won the 1982 European Micro-Computer Chess Chamninnshins?

(4) The fastest chess program in the world, called BELLE, uses special hardware to achieve its phenomenal speed. Approximately how many positions per second can BELLE examine? Is it (a) 500 (b) 8.000 (c) 75.000 (d) 160,000 (e) 470,000 or (f) 2,000,000?

(5) Describe a new feature which you would like to see included in the next generation of chess programs.

You'll probably have to be a professional chess programmer to answer all these questions, but the competition isn't open to them. Just answer as many as you can. In the event of a tie. the answers to question five will be used to decide the winner. Closing date for entries is February 16th and the usual C&VG competition rules apply. Please send your answers, on a postcard, to Computer and Video Games, Computer Chess Competition, Durrant House, 8 Herbal Hill, London EC1R SEJ.



MEET THE VIDEO GAME SUPERSTAR

Activision, one of America's voungest video game success stories, first made its mark on the industry four years ago with games like Dragster and Fishing Derby. Since then there has been no holding them back and Activision have created a string of popular titles which have won them a place among the frontrunners in this highly comneti-

I met David at one of London's top hotels, where he was happily tucking into a take-away lunch of some rather soggy looking hamburgers and chips. He explained this away by stating a preference for hamburgers rather than Enalish food! Perhaps it made him feel a little less homesick!

David first became interested in video games as a teenager when he visited arcades to play Pinball, but he added: "I soon realised that my interests lay in electronics and computing About eight years ago he started to program his own games in an attempt to forge a career in the industry

Since then David has produced many games for Activision

and has certainly made his mark. One game which earned him instant recognition as a top performer was Pitfall, which was voted 1983's Best Game of the Year in the States. In fact you could say that Pitfall made David

Crane a video-game superstar. The secret of a good game should combine realistic graphics with instant playability. a level of addictiveness and make full use of the machine's canabilities

When designing a game, you've got two choices - sports games or arcade type games. Sports games are easier in a way to design in that there are set rules to work to whereas there are no rules governing the design of an arcade type game. The format is entirely up to the designer." David described how two of his best games developed.

David first started writing Decathlon - a sports game which has recently been released some time ago. The first event is the 100m dash so he started off by programming a little man to run from the left to the right of

David Crane, a 29 year-old, 6'5" giant is one of the leading lights behind Activision's success in the highly competitive video games industry.

Activision, which was formed about four years ago, owes its outstanding success to the program-

ming prowess of games designers like David. During a flying visit to the UK, David took time out from his busy schedule to let Computer & Video Games writer Clare Edgeley into the secrets of games programming and his own particular brand of success.

the screen, the screen then programming in which you've got scrolls forwards showing the to compete in screen versions of athlete still running to reach his all ten events of the real life

Unfortunately, Decathlon orig at that time

Turning to the idea of an in exactly the same way as Decathlon - a little man running from one side of the screen to the other. And so the idea for Pitfall was conceived.

"I didn't have a preconceived idea of how Pitfall would turn out, I just added objects off the top of my head like pits, vines. ladders leading into the pits and the odd scorpion until I ran out of

memory "Pitfall was a difficult game to design as I tried to add a level of complexity to every step.

After completing Pitfall, a way was found to double the program size for Activision cartridges and David was able to complete Decathlon - an Olympian feat of

EXPANDING COLECOVISION ColecoVision system owners will or she can use any of the large range of games produced by and

now have access to the biggest video games cartridge library for the Atari VCS system. The available, thanks to the soon-tobe-released Coleco Expansion Module No. 1!

This plug-in module enables Coleco owners to use Atari 2600 cartridges with their system opening up whole new vistas of video games playing.

Legal wrangles have prevented the module reaching the streets for some time - but it should be widely available by now and will cost around £59.00. Once the Coleco owner has shelled out for the expander, he Decathlon

Unlike other video games inally had to be shelved, as David companies who employ a team couldn't fit all ten events into the of programmers to work on one memory space available to him game, Activision give each programmer sole responsibility for one game, from the initial conarcade game, he decided to start cept of the idea through to the final product

> A team of five to six designers work in one room in an atmosphere which David finds very supportive". In this creative atmosphere there is an "instant feedback and recognition in the quality of a game and a constant exchange of ideas."

The programming time for each game is somewhere between six months to a year. Typically, Pitfall took some 500-700 programming hours to complete over a period of six to seven months, while Decathlon was completed in just over a year.

However, games used to take longer to develop due to the graphics. "Originally we started

rather awkward Coleco control-

lers must still be used but, for

games that need the Atari paddle

controllers, Coleco owners will

have to find someone with an

The expander is good news for

Atari owners who want to up-

grade to a Coleco - but were

afraid they'd have to junk all

those expensive Atari cartridges

Combine the high-resolution Col-

eco cartridges with the module

and you really have got a super

Atari system!

system!

This time-consuming exercise was solved by David who developed a gadget which enables the programmers to draw straight onto the screen at four times the real size. Once the programmer is satisfied with the finished product, it is automatically converted into machine code and stored in the memory.

off by plotting characters and

objects in coloured squares on

graph paper and then doing the

conversions into machine code.

If we weren't satisfied, we would

have to return to the graph paper

and start again.

using this method." One of the passwords to the programmers' success are the key words: program size, execution time and storage memory. When programming, you have to trade within these three constraints." For instance, if the programmer needs more memory, then either the program size or execution time will have to be

Activision have recently

cut down

"It's approximately 80% faster

moved into the home computer market with River Raid and Kaboom for the Atari 400/800. I asked David about Activision's plans for the future. "Four years ago, our plan was to make a quality name in video games and once that name was established - to move with the industry. We are following a very well thought

out plan." David wasn't giving any secrets away and wouldn't say what was to follow River Raid and Kaboom, although I have been assured that more titles are

to be announced shortly. David tends to put in about four working hours a day at the office. "It's impossible to come in at say 9.30 am and expect ideas to flow for the next six to seven

However, David's got all the necessary equipment at home and can work from there if a flash of inspiration hite him

Pride in his work also shows in his personal life. David drives around in a car with customised number plates - you've guessed it - PITFALL!

COMPUTER & VIDEO GAMES



THE VIDEO PROFESSOR GOES ON PITFALL SAFARI

Welcome to the second of Professor Video's lectures, packed with useful hints, tips and strategies which help you beat the hot home video games. This time he's taking a look at the ever popular Pitfall, written by David Crane, Activision's ace designer - who we interview elsewhere on these pages. Over to you Professor!



when you learn that you'll discover six different treasures he. tween screens 41-57, this strategy doesn't seem quite so bad after all! Another shortcut starts in screen 13 — again moving right from the start - this will take you to screen 19 - again avoiding a screenful of crocs! Those crocodiles will perhaps prove to be your deadliest foe.

take on any sort of alien!

five sets of new video releases

called How to Beat Home Video

Games, produced by Polygram

Video. Each set consists of three

tapes which deal in depth with

strategies to beat games and

give those cunning hints and tips

to make your scores higher and

higher.

VH3

(ple

So here's how to deal with them when you are faced with a screen which doesn't offer you the option of grabbing a vine and swinging over their gaping jaws. There are three of the reptiles in each screen

Timing is all important. Wait until the first crocodile's jaws clamp snap shut then jump Harry onto his snout, quickly moving him to a spot behind the beast's iaws

Now the crocs will open their jaws again displaying a fine set of sharp white teeth. But don't panic. Wait until their jaws close again and jump onto the second crocodile - repeating the guick step to behind his jaws. The third orno is dealt with in the same manner - but jump off quick and run to the next screen

You can move left or right from Harry's start point. Moving right you come across more treasures earlier in the game. But by running left the rolling logs don't pose a hazard you can run along with them in the same direction

Oh! I wasn't quite ready for you. Sorryl Right, it's Pitfall isn't it Yes. Pitfall . . . now let me get my notes together. Ah yes! Here we

logs, forest fires, jungle lakes and the dreaded tar pits! Some of the lakes and pools disappear and Over the tar pit Pitfall but here come reappear mysteriously just when vou the snakes! poor old Harry least expects it!

control a lit Harry has just 20 minutes to tle chap called find the 32 lost treasures of Harry who is involved in Enarc — and only three precious a search for the lost treasure of Enarc. The key to winning at Pitfall is (Enarc/C-

knowing how to use the underrane, getground passageways which are tit?) During his search hidden under the jungle. Some of through the 255 screens of these passageways are dead the game Harry will en- ends - but others provide useful counter many dangers of short cuts to the treasure. One the animal kind in-

> above ground

Don't forget my

screens - so you

can see how much

time you'll save by

TRY GETTING IT TAPED!

Hello! This is Professor Video After you've watched each of calling! Last issue I began my these hour long tapes you'll be lectures in the art of video-gamable to pick up your joystick and ing, bringing you tips to help you play with the confidence of a video-grandmaster! I've managed to get hold of

So, how do you get your hands on a set of these great tapes? It's as easy as this - just send me your favourite points-winning tips for your favourite video game. I'll pick out the top five tipsters and they will each receive a set of the tapes! Describe the strategies or sneaky moves that beat giant gorillas, defeat alien invaders or save Pacmen from the grasp of phosts! And that's just a few

suppestions! Fill in the coupon below and attach it to your entry. Send it to Professor Video Contest. Comnuter and Video Games. Durrant House, 8 Herbal Hill, London EC1B SEJ. Closing date for this contest is February 16th - so get your tips in quick to beat the

Volume one of How to Reat Home Video Games deals with The Rest Games home video classics like Space Invaders and Missile Command, Volume two looks at the Hot New Games. including Pitfall, E.T., Raiders of the Lost Ark and Lock n' Chase. Volume three deals with games for the new systems

which bring arcade quality games into the home, like the Colecovisión and the Vectrex.

Nar Add

great video contest There are other hazards too on this page! TOP TEN underground scene is worth three

Battle Zone Atari 1 Enduro Activision Pole Position Atan 3 working out the Super Cobra Parket best short cuts. 4 Here's a couple of Popeye Parker Bros 5 short cut hints. If you

cluding scorpions.

crocodiles and snakes

10 Q*Bert Parker Bros

6

Tutenkham Parker Bros Donkey Kong cas River Raid Activision Zaxxon cas

Otake the ladder down on screen 15 - moving right from the start point - and jog along jumping five scorpions on the way - you'll come up in screen 19 having missed out four above ground crocodile screens. The crocs are your most dangerous enemy. More about them later!



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will say "ACTION STATIONS"

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before finishing it off.

life as a lowly Space Cadet.

TEST FOR SPACE ACES

If you fancy yourself as a real space ace then Gorf will give you the rank you truly deserve.

This home conversion of Bally's arcade game offers four separate shoot 'em up challenges and then awards a rank depending on your performance.

The first wave is Space Invaders with the addition of a force field. You have to blast gaps in the crescent shaped force field to enable you to pick off the Invaders as they advance

Stage Two is called Laser Attack and introduces a particularly vicious formation of aliens who buzz around the screen shooting long snaking beams of laser fire

Laser Attack will have you wrenching and pulling on your joystick but tougher things still lie ahead in Space Warp.

In this level the aliens spiral out towards you corkscrew fashion. As they approach they get larger and will collide with your ship unless you can get them in your sights and blast them

will have to do battle with faster, more numerous aliens with heavier fire nower. Another cloning of a well known arcade game. Available now at £29.95 from Colecovision.

THE VERDICT If you liked the arcade game you'll like the home version ton

Action • Graphics 111 Addiction 111 Theme 11

SMURF TO THE RESCUE

is the Flag Ship. This is the Gorf's Smurf must be the "cutest" of all home base moving back and "cute" games! That little blue forth across the top of the chap with the floppy white hat screen. The force field is back in has even managed to overtake position so you will have to shoot Pacman in the C&VG cuteometer a clearing in this and then make rationel

several direct hits on the ship He first appeared on the Colecovision system - in search of Your mission is now complete Smurfette imprisoned by the evil and you receive your rank. I Gargamel in a gloomy spidermanaged to attain the rank of filled castle. Now Smurf can con Space Colonel - which wasn't tinue his quest on the Atari VCS had considering I started out in thanks to CBS Electronics! The Atari version follows faithfully in If you think Gorf may enable the footsteps of the Coleco oriyou to become a hero overnight ginal. Despite the limitations of then forget it, because each time Atari VCS graphics, the CBS conyou camplete one mission you version is remarkably good get given a new, tougher one! particularly when it comes to ekveranae

The Smurf still walks along a bit like a cross between John Wayne and Charlie Chaplin -

which adds to his cuteness! In case you've not seen the Coleco version, the object of Smurf is to rescue Smurfette from Gargamel the giant's castle. The Smurf has to trek across rough countryside, jump picket fences, leap over rivers and brave the dangers of Gargamel's dungeons before he can reach the giant's sitting room where Smurfette is imprisoned on a shelf high above a vast table.

The rivers and the final screen are the only features in the Atari version not found in the Coleco

If you play on skill level one, the Smurf simply has to hop, skip and jump along to the final screen - avoiding the nasty spider in the dungeon screen and rescue Smurfette.

If you go up to skill level two, then Gargamel's hawks, smakes and bats will be after you making the game much more challenging. You have to duck and weave as the assorted nasties come at you!





GORE

SUPER COBRA



ART MASTER





SMURE

DECATHLON



The final screen is quite difficult. Firstly you have to beware not to rush into it too quickly. If you do, your Smurf will walk right into a chain and you'll lose a life without even getting a crack at rescuing Smurfette. Unlike the Coleco original where you had to get your Smurf onto the top of a skull and then make a quick hop up to Smurfette, the Atari version adds a few extra hazards. You have to jump onto a chair, then onto the table, then another chair before finally being able to take that final leap onto Smurfette's shelf! All of which takes a bit of practice and good joystick control. If you play on skill level two. the castle bat will be attempting

screen too! The little character will soon win your heart - even though it does take a bit of time to master his leaps, hops and dodges. And CBS have obviously gone to a lot of trouble to ensure the VCS graphics match the Coleco's as closely as possible. Personally I liked this version better than the original - except it's still got that irritating little tune!

to thwart your rescue hid in this

THE VERDICT

If you like cute games then Smurf is the ultimate in cuteness. But will the challenge last if you are a dedicated

video player? Action Graphics

TTTT Addiction ● Theme 111

MEET THE ART MASTER

Now for something completely different. Last month we complained that the range of games for the Vectrex lacked variety. Milton Bradley have responded to this criticism by submitting a game for the jury's scrutiny which is completely unique not only for the Vectrex, but part in the famous Olympic tenunique amongst all video games systems

The Art Master cartridge enables you to become a video artist for an afternoon. Designed to work in conjunction with the

Vectrex light pen, you can use Art Master to sketch, draw in metre races. You also need as dots and then connect them up. and even animate your drawings to create genuine cartoon

The sketch function lets you enjoy the simple fun of doodling in light. You can copy pictures from books, write messages, or play noughts and crosses. The connect function lets you draw in dots. You can use this to create dot pictures and ask your friends to quess what they are before pressing the button to connect up the dots. Options are chosen by selecting choices from a menu using the light pen which you simply point at the function

Although doodling in light is fun the real attraction of this cartridge is the animate option. Although you cannot execute very sophisticated animation. you can do simple things like drawing a plant and making it grow, or make a stick man walk across the screen.

The Art Master cartridge comes complete with the light pen and an instruction booklet. In the shops now at around £30.00.

THE VERDICT

you require

to your Vectrex.					
Action			1	1	d
Graphics			i	1	,
Addiction		i	4	÷	
Theme	1	1	1	1	

PURE GOLD DECATHLON

Decathlon is the most exhausting video game ever to come up before the jury! You should have seen them when they came out to present the verdict - the

foreman could hardly stand up! The reason for all this tiredness is due to an entirely new innovation in videogaming - the shake-speed joystick.

It's not a new joystick, but a new technique in David Crane's - of Pitfall fame - latest game - Decathlon.

You control an athlete taking event contest. To make your man run forward you have to move your stick as fast as you can from left to right. The faster you shake it, the faster he moves. Speed is essential and not just

much speed as you can muster to gain maximum height in the nole yault, high jump, and length in the long jump. Speed also enables you to gain momentum when throwing the javelin, discus, or putting the shot. Your athlete has the advan-

to win the 100, 400, and 1500

tage of a speedometer at the bottom of the screen, which measures his pace with a red fuel level style display. When he's at full pelt the line will shoot up to level six, and fall back to nil when stationary.

To jump or throw press the fire button. Some of the events are more fun than others - my personal favourites are the high

jump and the hurdles. from Activision for the Atari VCS. Like the rest of the Activision games, if you get good enough at them you are rewarded. In Decathlon you can send off for a gold medal if you score over 10,000 points. Available now at

£29.95 THE VERDICT

• Theme

This is your chance to go for gold. The most playable sports simulation for the VCS

- for up to four players. Action Graphics 111 ● Addiction 1111

SUPERCOBRA SUPER GAME

Scrolling games are pretty thin on the ground for the Intellivision, so the arrival of Parker's Super Cobra was greeted with considerable excitement by the ladies and gentlemen of Joystick

The Scramble-type game from Konami was a significant hit in the arcades despite being slightly over shadowed by Scramble

Now the game has been licensed by Parker Brothers and converted for home use on the Intellivision Four levels of scrolling, bomb-

ing, shooting action have been incorporated in the game for one or two players.

Piloting your chopper through enemy terrain you are attacked by ground to air missiles, and

bouncing bombs.

You'll need all the skill you can muster as the enemy barrage intensifies and the caverns and cityscape through which you must neontiate your chonner get narrower and narrower. Needless to say the Intel disc controller doesn't make this any easier.

After 7,000 miles a squadron of alien flying saucers attack you with missile fire. Fuel dumps are now few and far between so you can't afford to miss hitting them to boost your supplies each and every time they appear

At the end of the caverns and city skyline are three enormous skyscrapers with the words Konami and Parker Brothers written on them.

You are now near the end of your long flight and have to bomb one last ground installation to complete your mission. It will take the most skilled

video ace several attempts to crack this one. THE VERDICT

Another good game for Parker Brothers - filling a gap in this type of scrolling shoot 'em up for the Intellivision. Available now at £29.95. Action 111

Graphics 111 Addiction 111 Theme Next issue we're letting the

members of our joystick jury loose on some hardware. Namely the invsticks themselves. We reckoned it was about time we took another look at the devices available to play games with - on home video game systems and home computers. Our joystick jurors will be

looking for the ultimate stick and at the same time will be bringing you up to date news of what's good in the world of sticks

Also we'll be taking that look at laser-disc technology for the micro games player. That's using a few longer words to say what we promised you this month - but we just ran out of space this issue! We'll be taking a look into the future and predicting that you'll be able to play laser games on your home computer - games like the ones that are revolutionising the arcade industry right now!

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TIPSTERS PAY RISE

On seeing that Seamus is paying £10 for hints and tips which reach his Program Extra page, I've been saving up especially, and can now afford to do the same. So from now on, any letters, hints or other tips which make the Bug Hunter page will earn £10 for their authors.

And talking of Seamus, I'm currently training him in the art of Bug Hunting and I assure you that he's very nice to talk to. So next time you have a problem and I'm off fighting the Bugs, ask for

Here at C&VG we've come up with a clever idea to keep calls evenly distributed between myself and Seamus. Next time you have a problem, toes a coin before you telephone the office. If it's heads, ask for me and if it's talls then ask for Seamus! And if it lands on its side, phone the Guirness Book of Records! Now, back to the serious stuff.

GO FASTER DRAGONS

Dragon users will probably be aware that some Dragons can be speeded up simply with a POKE. Not all machines will allow this. But now, courtesy of Bug Hunter Enterprises (with a little help from Ahlan Davison-Grey, our Dragon software reviewer), here's why, or why, or why.

The central chip in the Dragon is a 6809E, where the E means that the chip gets all its timing signals from an external clock. The clock takes the form of a crystal, and the frequencies it produces are handled by another chip.

However, you can alter some of the registers in this last chip to alter the speed of the clock which drives the 6809. This has the effect of speeding up the computer so that some games will run twice their normal speed.

However, the 6809 was not designed to run at this speed, so don't be disappointed if yours doesn't. But, says Ahlan, the fact that so many do, is a tribute to Motorola, the manufacturer.

tribute to Motorola, the manufacturer.

There is certainly nothing wrong with
a Dragon which will not run at the

CHEQUERED FLAG — PSION

higher speed.

James Alston from Bromley, Kent, writes to tell me of what he thinks is a bug in Chequered Flag. At the end of a race, he says, the computer is supposed to print the fastest lap time. In fact it prints up the time taken to complete the last lap. Has anyone else found this prob-

SPECTRUM GRAPHICS

We still get calls from Spectrum owners who have tried running games from our magazine but all the graphics come out as lower case letters.

This is because the game uses user-

defined graphics characters — that's what all those DATA lines are for.

The solution is simple. If, when typing a Spectrum program, you see a PRINT ilme with some lower case (small as opposed to CAPITAL) letters in speech marks, these are probably user-defined graphics and need to be entered in graphics mode.

To do this, type the line in as normal but when you get to the letters, enter graphics mode by typing CAPS-SHIPT with 9 to get a G cursor. Enter the characters and then get out of graphics mode by typing CAPS SHIPT with 9 again, and finish typing the line.



While to me at Bug Hunter, Conquiler and Video Grames. Durreunt House, 8 Herbert Hill, London, ECIRSEJ. Or phone Me on 01-278-3881.

RABBIT RAID — SPECTRUM

If you managed to get the graphics correct in Rabbit Raid for the Spectrum from November's issue, then here's how to add some sound to it, courtesy of Ian Lewis from Lewes, East Sussex, who's the first to earn the new improved sum of £10 for his efforts.

of £10 for his efforts.

On line 30 after RAIDd": and before GOSUB add BEEP .3,7: BEEP 1,.7:Beep .3,7 and at the end of line 330 add .BEEP

.05,14.

Ian also suggests that a more realistic score system is made by changing line 250 from S=S+100 to S=S+250.

TIPS FOR THE ATARI

Here are a few useful tips for the Atari 400/600/800 from Christopher Roche of Sutton Coldfield.

To disable the break key, type POKE 18,64: POKE 53774,64. To disable the system reset button, try POKE 580,1. Now, if anyone presses it, the machine will erase all its memory including the program.

To destroy all variables try FOR X=PEEK(130)+256*PEEK(131) TO PEEK(132)+256*PEEK(133): POKE X.0:NEXT X.

After entering this, when LIST is typed the program will be listed in an unreadable form.

Also for Atari owners who keep having occasional errors with the 410 cassette recorder, try typing LPRINT before CSAVEing. This will produce a harmless error message, but just continue as normal. Thanks go to Donald Dods from West Lothian for this.

WILD WEST — VIC 20

Vic 20 owners may have been surprised by the Wild West program from December's issue. Even though the program needed a super expander cartridge, there were still three commands in there that he machine did not understand. The problem stemmed from the fact that we haven't saved up enough for a Vic printer yet, so I loaded it into our Pet to be listed.

However, because you can't get a super expander for a Pet, some of the tokens from the casseste were missing to the form the casseste were missing to the period of the pe

The latest batch comes from Peter Lee of Ilford, Essex. Peter talks about problems with Psion's Flight Simulation, Ocean's Kong and has also told me of a problem in Valhalla which causes the program to return you to BASIC, able to LIST the game!

Well, that's if for another month. Don't forget that you can always talk to me about your computer problems on 81-278 3851. I've just had one of those 278 3851. I've just had one of those being phone so il you are audiced by the problems on the sign phone so il you are audiced to the night or at the weekend you can leave me amessage. You may also find that the machine is on during the day if I'm ticd up with the draaded Seventh ticd up with the draaded Seventh with the distance of the sign of

Meet Alf, the Dustman. Not any ordinary dustman, but a hyper-intelligent mega-dustman. He has found himself in a sport of bover with neither lawnowers nor bears, but numerous tons of homicidal rubbish. To make life even more difficult (and confusing) his favourite beer is in hot pursuit. But there is help on the way. The findends of the Bilneis or the said of the sine is not assist Alf in overcoming the evil waste. Meet Alf, his friends, his emenies, and 20 waves of sheer madness.



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HOLD ON — GOING DOWN, DOWN, DOWN



The latest convert from wideo to pinball is that master of arcade abuse 0"Bert. Gottlieb have transferred the little chap from video-screen to pinball playfield in 0"Bert's Guest. And all Mr 0's mates have come along too. Colly, Ugg and Wrongway are still out to make life difficult for 0"Bert as he attempts to build 0"Bert as he attempts to build

his pyramid of coloured cubes.

By hitting one target — the monster's den — you'll release an extra ball, but the monsters escape too to cause Q*Bert more problems.

This machine has one irritating feature — the ball tends to stick around the upper chicane section of the playfield, hesitating at entrances to passageways — and this upsets the rhythm of play which generally is fast and furious.

For soccer fans Gottlieb effers Striker — the player takes on the pinball machine's team clad in yellow. The player gets the white strip! There are, of course, lots of teleraces to penathes, free kicks, and corners — but the game is still fairly basic on its general playability. Gottleb are still trying to find that one game that clicks with pinball fans but to give them their due they are real tires!

Shock horror probe department Can it be true? Matthew Broderick, the star of the movie Wirdsmerk, the hore about the Computer-kid who almost starts World War Three by tapping into the American defence system with his home micror— deesn't easily like computers Talking to the London Evening Standard and Computers are World Wirdsmer Computers are with the Computer C

ball more."

Don't forget we're still interested in hearing your views on pinball and your high scores too.

Pee-awww! Whee! Zzing! You'll have to duck, dodge and jump to escape the bullets of those shif-

escape the bullets of those shifty-eyed, trigger-happy security men.

Elevator Action certainly lives up to its title — your aim is to get

from the top to the bottom of a top security defence building via lifts and escalators. In your search for the top secret documents, you'll come

a up against a crew of lean, mean a security cops, all toting pistols and ready to stop you at any cost from reaching your get-away

car.
You'll have to keep your wits about you while you descend, as you stand a very good chance of getting shot.

On each floor is a series of closed doors, and a security man, or two, could leap out at any time blasting away. You carry a gun, as do all good trainees of 007, and you'll soon learn a few tricks to get past the baddies as you shoot up and down in the

Using your joystick to keep the lift between floors, wait until one of the baddies takes a pot shot at you and then quickly move to his level and shoot back. Because there is a small time delay while he reloads, you can be sure of a

Trained by your government, you're also a karate expert. Using the jump button, you can leap
off the lift and deliver a lethal,
mind-blowing kick to your opponent which will effectively lay
him out!

DONKEY KONG DONKEY KONG

One of the latest games from Nintendo is Donkey Kong 3 and the new game introduces a likeable character, Stanley a gard-

able character, Stanley a gardner, who takes over where Mario left off — only this time he fends off the mad monkey to defend his greenhouse.

Armed only with a spray gun,

Stanley chases Donkey Kong up the vines, keeping nasty insects and critters away from his flowers. Each pest has a personality of its own and Stanley must work fast and furiously to keep the creepies under control. If he is

ELEVATOR ACTION

Red doors appear at random and behind each one are secret documents which will earn you bonus points. If you go for the red doors, keep your eyes peeled as the guards will redouble their efforts to get you.

As you descend, the floors become wider, there are more doors, more security men and up to five lifts travelling up and down. A lot of skill is needed to reach this stage, to dodge the rapid hail of fire and still get through to the next floor in one

The building must resemble the Empire State in size as there seem to be an awful lot of levels eir to get through before you can

make a run for it.
Elevator Action by Taito Corporation has a really original theme and I found it a pleasant change from the normal spaceage shoot-em-ups.



BLAZE THOSE STAR BANDITS!

Scramble! Bandits at 3 o'clock! You push your joystick forward and enter the fray. The space city must be saved at all costs.

city must be saved at all costs. Weaving and dodging through the city's underground highways, you whiz round a sharp 90 degree bend to beat off an enemy attack of fighter space ships. You

attack of fighter space ships. You can't relax your vigilance for a second — more fighters are attacking from the left.

quick and cunning enough, he can get the super sprayer and make quick work of Donkey Kong and his pack of pests.

There are three different playboards and four difficulty levels to Donkey Kong 3 providing, variety and challenge. One or two persons can play and each player can get from three to six game fives. When you reach 30,000, 40,000 and 50,000 points, bonus lives are awarded

The character's proven popularity, combined with fast action and superior sound effects, make Donkey Kong 3 a sure hit in arcades.

STAR BLAZER

through the crags and peaks of a mountain range to enter a valley. With lasers firing, you steady your craft and take careful aim at a convey of tanks. Star Blazer by Sega is the

official follow-up to Astron Belt but, unlike Astron Belt which is played entirely in space, you will be battling it out over many different terrains which include the interstellar airport, rocky mountains, oceans and deepest space.

The graphics are comparable with Astron Belt and are produced with the aid of Scanimate, a device which Sega claims creates ultra-realistic images. I tend to agree. The ocean seems to heave and roll and the fighter and enemy mothership are very life-like — they resemble the Empire's battle ships of Star Wars fame.

Arcade managers will now be able to convert the old Astron Belt machines to the new Star Blazer by using the conversion kit from Seas.

It's nail-biting stuff as your two lanky heroes almost career off the edge of a cliff in their efforte to escape the bunch of heavies in hot nurquit

Aptly named, Cliff Hanger keeps you on your toes throughout this fun-packed game filled with bizarre and amusing scenes, including nerve-racking car and helicopter chases, a beautiful girl to rescue and a meeting with some sinister

hooded gangsters. With animated cartoon style graphics, comparable to Dragon's Lair, Cliff Hanger is one of the first games of its type to reach the UK. In the next few months we predict that laser disc games will become quite com-

SAVED BY A SAMIIRAL SWORD

CLIFF HANGER mon in the arcades but at the

moment they are still very much a novelty

The story begins with your two young lads escaping from a casino with bags of counterfeit money. They leap into their bubble car and a mad chase ensues object"[] through the busy streets.

Arriving in the country, they have a nuncture and, whilst repairing this, they see the Mafialike baddies roar past in a limousine chasing a helpless and beautiful blonde in a 2CV! Leaping to their feet, the boys pile into the bubble and give chase. A intrepid heroes are rescued by the timely arrival of a samurai warrior in the city's sewers! As he brings the 'copter crashing to the ground with his sword, he uttore a few memorable words in a very un-Japanese accent -Once again I cut a worthless

A four-way joystick and feet and hand buttons control the action which is played out in cartoon-style graphics. Instructions like 'Stick' and 'Action' will flash

to the screen and it's then up to you to decide in which direction to move and whether to use hands or feet. Each time you make a wrong move you'll be told what you did wrong As in all laser disc names

there is a dead area between coange while the lacer coane the disc for the next scenario. This has been very well disquised with a notice wishing you good luck in the next scene

With lots of action and great graphics Cliff Hanger by Stern Flectronics will certainly be a hit in the arcades in the New Year

VHIZZKID RACES INTO ACTION If you think you're a scrambling

whizz-kid - then try riding the Super Bike.

Bombing down a country lane you shift into top gear and revving up your bike try to break the ton. Suddenly a series of potholes split the road in front of you - jerking on the handle bars you pull the bike into the air and sail across them. But don't get

too confident, more is to come Packed full of stunts, you've got every opportunity to prove that you're at least as good as or better than the infamous Eddie Kidd. Leaping over potholes, fallen trees and bushes is the least of your problems. Armies of

SUPERBIKE

death heads in the form of skulls and crossed hones descend on you from out of the blue and, armed with a fire button, you must blast them back to hell before they land on you

Other feats of skill and dexterity will include whizzing up a ramp and jumping over a line of buses and providing you've managed to stay on your bike,

you'll reach a tunnel which has to be negotiated to reach the end of the name Beware the skulls - they'll be

attacking from behind as well as



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Championship title. Your name may well be plastered all over the high score tables on several machines in your local arcade - but believe me, you can only call yourself a true arcade champ when you stand up to receive the Computer and Video Games Arcade Champion trophyl

In our next issue we'll begin the search for our 1984 champion. Your first move will be to fill out the coupon and mail it to us.

All we ask you to do is to take the form along to your local arcade, pub or place where your favourite arcade machine lurks, get that high score and get the publican or arcade owner to witness it

for you. You can aim for a high score on up to three different machines. Your chances of reaching our grand final in the summer are increased if you enter on more than one machine. There will be a grand prize for the overall champion plus runners-up prizes too. So don't forget get next month's Computer and Video Games and begin your quest to become King - or Queen of the arcades!

CUNNING IN THE COCKPIT You've stolen a top secret

Atari is entering into the laser disc games race with what promises to be a thrilling spin-off from the movie Fire Fox, based on the action film by Warner Brothers which starred Clint Fastwood

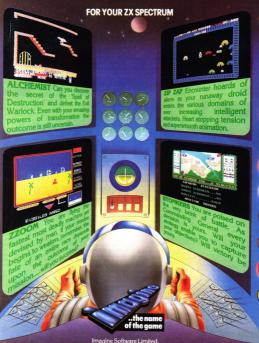
It's rumoured that hundreds of thousands of dollars were spent buying the rights to Fire Fox and producing the arcarde game with the aid of a simulation model of the cocknit

Russian fighter iet and have to fly it out of Russian territory to the Americans. The Russians don't let you get away easily and send up missiles and other fighter jets to stop you. Your plane has its own weapons system, but you'll have to use your skill as a fighter pilot and a lot of native cunning to escape in one piece.

Atari believe that Fire Fox will be a spectacular success and are planning to launch it sometime this year



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and the local XVIII
an OH MUMMY for the LYNX

OH MUMMAY for the LYNX.

Your party of archeologist enter the pyramid in search of the mummies of the phreads in search of the mummies of the phreads in search of the mummies of the scrolls, keys, regal mummies and one ready surprises. It pass from one scrolls, keys, regal mummies and one legs your prices. It pass from one chamber to the least, you must find the key and the royal mummy, but bewarn, you must find, with will chase your proprie to average your you seems you occurred. We must have your propriet average your your propriets of the party of the propriets of the party of the propriets of the party of

UNTIL — 1 for the BBC-B.

Two very useful utility programs for the BBC-B. Both lested on OS 10 and above. Character Ceferic gives you a comprehensive and simple way to quickly create all manner of use defined characters. Envelope Editor will enable you to unitared the complexities of the Goard and Elevelope commands, so that you can

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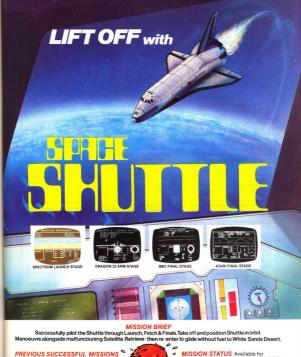
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KEEPING MARY AMUSED!

And now for something completely different! A graphics adventure where the action is played out before your

Valhalla loads in a Spectrum under a striking title page and offers you six quests. These are to find special hidden objects: Ofnir (key), Drapnir (ring), Skornir (shield), Skalir (sword), Felstrong (axe) and Grimnir (helmet). These obnirs can only be discovronged in the above ordir.

The gameworld has a cast of dozens, and at any location you may expect to meet and perhaps cross swords with a range of gods and goddesses (including Mary), giants, dwarfs, wolves and dragons, of varying temperaments and abilities.

KEITH CAMPBEL

In search of the foreign objects, you move around by issuing the usual Adventure commands, but may also play a 'wild card' by jumping on to a ringway if one is present. This is a magical method of transportation rather than a continuous urban dual carriageway, and to travel one you must be carrying of course a ring!

Where Valhalla is different from other graphical Adventures is in its display format - the screen is split into three hands

On arrival at a location, the top half displays an excellent hi-res picture. drawn very quickly. I got the impression that these graphics were composed of modules, re-arranged to give many combinations of picture from the same TALE OF COUNTRY FOLK blocks.

replies, whilst the final band rather too slowly draws the characters and objects present. The centre band therefore appears to form a continuous picture with the top band, like a stage

In some ways, this game is like Hobbit, for all the characters have a mind of their own, and appear, disappear, drop things and attack you and each other according to their whime But unlike Hobbit, they actually move. Their little legs walk, they jump about whilst fighting, and lift their wine to their heads when they drink. As this happens, so a text commentary is written below. If you want to pick up an object, then your figure will walk across the screen and Of course, all this slows down the rate

ossal problem, trying to pass the clam. He is at his Witts End — and that baffles him too!

Steve Waller and Ian Hall have so far amassed 274 points out of 1100 in this game, and admit they can get no further. They have heard of dwarfs sleeping in a cave, and of dynamite. They urgently need directions to find them. If I can't help, who can, they ask? Oh dear _ I can't? Who can?

But the most elegant Colossal plea comes from Mr. Dan Clark and Dr. Andrea Kingston, playing away at Skylark Farmhouse near Norwich. Rustics that they are, they turned bard to crave help:

Bumpkins' Lament

Colossal Classic mainframe game, Is driving us poor kids insane. It seems we've run right out of

We get so far and then get stuck.

We have the jewelry and the vase, The golden eggs and silver bars,

A COLOSSAL The spices and the precious nugget James Frost is stuck with a Col-(Quite a way we had to lug it).

Can you help us in some measure With the other hidden treasure? Y2, carved upon a rock, Could it be a secret lock?

The rug we think perhaps can fly To secret places in the sky. Will the mirror smashed and hroken. Lead us to another token?

"Hocus! Sesame! Shazam!"

"Nothing happens" — blast and Bumpkins both in helpless plight Please save us from more sleepless nights.

To which I can but reply:

Hi Dan and And! Oh woe is mine! I've had no tape from Level 9, And so, you see, I must rely On that great Mainframe in the sky.

My problem is with ease predicted,

Time on Comshare's much res-

Thus forays in this game are brief And efforts mostly come to grief.

I've caged the bird that wings it (That rusty star's a nasty trick!) I've built and crossed a bridge of

crystal, And lost lamp's light for reasons fiscal.

I've kissed a frog (some think me And passed on warts to princess

I think I'll catch some tadpoles The way those frogs cavort the

room!

To readers all with 9's adventure! I herewith offer my debenture, In return for heaps of clues. Please put an end to bumpkin blues.

EDUCATION THROUGH ADVENTURE

Solving an Adventure, as most of us know to our cost, is often a matter not only of solving a puzzle or being observant, but of hitting upon a particular word or phrase. Out comes a dictionary and Roget's Thesaurus, and with perseverance, we win through!

But what of an Adventure written in a foreign language? Never seen one around? Not played 'La Maison d'Amusement Mystère? Nor have !!

Consider the plight of Walter Goegebeur from Edegem, near Brussels. "Hoping you will forgive my mistakes against 'living English," writes Walter, "but you're my last hope from being kept away from cracking Scott's Mystery Fun Wosse". Walter had spent more House'. Walter had spent more house will be seen to be a seen of the work of the work

it was an English word or phrase he

needed, or if his problem was the puzzle inself IS of was pleased to be able to reassure him on his English, and spill the beans (Son-Figlish, and spill the beans (Son-Figlish, and spill the beans (Son-Figlish, and spill the puzzle and the difficulties of playing Adventure in a loreign language. The phrase I just used has nothing to do with making a nasty meas in the kitch-making a nasty meas in the kitch-making a nasty meas in the kitch-making a nasty making maki

Rene di Giovanni wrote from Amsterdam to relate his difficulties with Espionage Island played on a ZX61. He was stuck in the plane, and unable to escape without dying. PULL CORD is the clue, and Rene could see the cord, but perhaps that phrase is particularly Enolish.

On the other side of the coin, our lock-collector and masochist

Adventure-converter, Bill Stanton, spent his bolidays in Germany, and golf involved in Intrastating a French Adventure. "Have you over tried getting French-typeaking German-getting French-typeaking German-typeaking German-typeaking German-typeaking Company and Stanton Company (Stanton Company) programming his Pet with well known Basic statements like FOUR JES- 1 A Stanton Company (Stanton Company) and Sta

On a more serious note, the Adventure format lends itself admirably to educational software that has expecially languages. It is an area of software that has not been exploited. Wouldan's school pupils find it fun if their next French homework was "Comment reveillez-vous la dragon dornante"? They would nave to play a special version of Adventureland — in compiled French, of course!

of play, but if you like watching it all happen, then you'll put up with that. Valhalla has a range of special commands. WHO will list the characters in the text area, with an arrow pointing

manus. WHO will as the Characters in the text area, with an arrow pointing the state of each impact MFAFT will be used to each impact MFAFT will be used to each impact MFAFT will be used to be suffered to each impact of the state of the st

Valhalls is written in Basic with stome machine code routines. A look at the listing won't reveal much in the way of chies. And despite protection against looking at the listing, it's easy because, despite all the ballyhoo preceding its arrival, and a seven-strong production team, Valhalla has at least one bug, which will cause the program to stop and you to reload. But will YOU discover the words that crash the game?

Valhalla is from Legend, overpriced and overrated at £14.95.

GATEWAY

When we had a family visit recently, all the kids made for the computer room. This is known in most houses as a dining room — but it enables us to play while we eat!

wines we east. They ignored Space Adventure on They ignored Go and base them) and Zork on the TRS-80 (foolst), and although Dougle aged 8, defected to Donkey Kong on the Drayon, Karl and Rebecca headed straight for Gateway to the Skies on the Beeb. Of course, the Beeb is a schoolfriend, and my ulterior motive in getting them to help me through a review whilst being hospit-

PHILOSOPHERS, INCAS AND SORCERORS

Many try to enter the porthole, but are cursed by the lineas: carry the right things — one of them must be chiselled out of the flint.

To James Jennett playing Ship of Doom: a double switch may cast light or way arphlem

light on your problem.

To Brian Jones playing Sorceror's Island: bribery can pay

dividends.

For the impossible mission:
don't be bad — do as you oughta,
take the bomb up to the water.

take the bomb up to the water. For philosophers everywhere: approach cheese with protective device, and after taking it, drop it every so other for a bit. To relieve your neck, find the workman life. The processes, they cared and run when in danger! And how many dogs do you want? Settle for three? Can you spot the second? You'll have to spot the third!

able to visitors had worked!

I went off to quaff home-made beer and make polite conversation, and occasionally popped back in to see how they were doing.

Quick responses — good! White on black text — bad! Replies less than terse — good! Karl had used a credit card in the village supermarket and got the reply "That'll do nicely!" I liked it! Back to the quaffing... I could hardly wait till they all went, and I was straight on to the Beeth. Now hardy Adventurer's will never pass up the opportunity to take a lamp or food. Once spotted, you can quarantee there will be an area of darkness ahead, and that you will need sustenance. So I took the lamp offered me in the gift shop, and proceeded to the supermarker with my credit card for

food. That is where it all went wrong. The supermarket cashier ratted on the deal, disappearing with my card without handing over the food. On impulse, I tried to shoot her with my laser gun. "I don't understand the word cashier." EXMMINE FOOD. "I don't understand the word EXAMINE." LOOK FOOD told me where I was

Now just as necessary as a lamp, is the Adventurer's stock-in-trade — "LOOK (or examine) object". Being able to look at, and examine things is one of the means by which an Adventurer gets the means by which an Adventurer gets the property of the property

I got the food later, but my enthusiasm was shattered. A pity, for this game held such promise! Vocabulary — bad. Logic/difficulty

Vocabulary — bad. Logic/difficulty — doubtful. Plot/theme — shakily promising. Shall I try again . . .?

Gateway to the Skies comes in two parts. I only looked at the first half, as you have to save data at the end of it to enter part two. From Solar Soft. For the 32k BBC.

priced £8, 48k Spectrum, priced £6.95.





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HELPLINE

Every now and again one of those desperate people trapped in small room with a calculator write in. The fact they are not in an asylum yet is a tribute to their tenacity. Has ANYONE got out of there since I last wrote about Deathmaze 5000, a couple of years ago?

Mr. Poles of Lutterworth will be disappointed to learn that the general consensus of opinion is that the Philosopher's Quest lamp cannot be lit.

Congratulations to Robert Davidson from Macclesfield, and Colin Bignell down in Littlehampton, the only readers so far to lay claim to completing this game. In a long helpful letter, Robert suggests that Mr. Poles must have been sleeping with the lamp on, for the game can be completed without relighting it. Colin Bignell says it cannot be relit, and warns Mr. Poles to be careful in its use - especially when talking-to the old sailor. James Frost of Windlesham agrees, and suggests using matches for extra time.

Rut what's this? Karl Howard writes from Rochdale and says the lamp CAN be relit - type RUB LAMP. I suspect the confusion is because Mr. Poles did not state whether or not he had run out of

Shaggy dogs, cheese and albatrosses are among the favourite subjects of all good Philosophers, and clues have arrived from numerous sources, including Roger Durrant, Mark Chaffey, and C. M. F. Bone, to help David Somekh.

Keith Lumb from Lowton near Warrington is shedding crocodile tears in the everglades. He is playing, or rather trying to play, Sphinx. Why does his magic bridge collapse when he tries to cross it? And what about those crocs?

Christopher Tihanvi is a troubled man. He's got five adventures in a state of chaos down in Bristol. I can help him directly with some, but here is a plea in which I join how DO you open the Xenos safe?

Martin Brunt of Woolwich is lucky enough to be playing Zork on a VAX-11 750, but is unlucky to have run into severe problems. (Don't we all!?) What is the receptacle in the balloon for? Martin suspects it's for something with which to heat the air, but the only suitable object he can find is an ivory torch which burns out after melting the glacier. Come in Zork players!

Do you know where to find the second stone tablet in Golden Voyage, to help Paul Hurditch in Rotherham?

Some find Mission Impossible too simple, others impossible. Disarming the bomb has caused much confusion, especially to Andrew Dobson. See page 57 for the clue. So many readers have written in

with high Hobbit scores, it would take a page to list the names! So here is the only claimant to a 100%

score so far - by Keith Oliver of Tollesbury. From David Worbishley of Baldingstone, come some comments about Swords and Serpents. He suggests that Messrs. Hughes and

Nosworthy have not enjoyed the full flavour of the game, which can only be done playing the two-player version. "The great advantage this has is

that the players can actually enter the dragon's lair, gather up the treasures inside, and talk to each other to combat the excruciating boredom," writes David. "Incidentally," he adds, "the dragon plays no part in the game and might just as well be a piant sausage as a sinister serpent."

If YOU are stuck in an Adventure, can help an Adventurer in distress, or have an interesting or amusing Adventure experience, write to me at Adventure Helpline, Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5JB.

CROSS THE DOTS!

Space Island turns your Spectrum into a control panel on board a starship in geostationary orbit above the island of Roba on the planet Zyro. You control an android who 'stands alone amidst wreckage and awaits your command." Your TV set becomes a videoscanner (what else?) showing an 'orbital map' of Robe Teland

Somehow my Spectrum didn't quite have the feel of a control panel - well, let's face it, have you ever seen a control panel you can slip into your back pocket and not notice?

Obviously my pet android felt this, for when I tried to move him around the tiny island (him a dirty great cross trying to rendezvous with microscopic dots representing objects), he didn't respond with quite the alacrity one

might expect from such a high-tech device. Once moving, this obstinate creature would proceed inexorably in the same direction until commanded otherwise. Even after a good night's sleep he would wake up and plod on regardless in obedience to his previous instruction!

Apart from this painful method of movement, Space Island boasts a vocabulary of 19 words, yes folks - 19! Not whole words admittedly, but the initial letters of verbs.

The cassette inlay mentions slick machine code display. However, the program is written in Basic, and reaction is just not slick enough to give

adequate control. Space Island is for 48k Spectrum from Terminal Software, price £6.95. Fairly apt, for if I'd played it for much longer, I would now be suffering from terminal boredom.



The Elect

Pack up your paintbox, throw away your paintbrushes and move into the electronic age of art with our amazing new

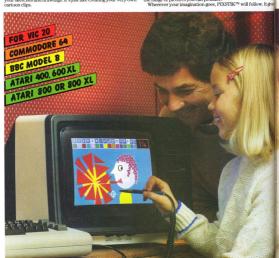
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the range of pictures you can produce



you freehand freedom or creates straight lines, triangles, rectangles, circles and ellipses with geometrical precision Choose whether to fill your shapes with solid colour or leave them blank. And if, after that, you still favour a paintbrush effect, simply move PIXSTIK^{DI} into paintbrush mode and it will

What makes PIXSTIK™ even more special is that it doesn't simply stop with a completed picture. Because it incorporates the special ABC feature, you can use individual designs as part of animated sequences and cartoons.

> At the "animate" command, pictures stored in memory will reappear in turn. On the "bounce" instruction, your pictures will move forwards and backwards and when "cartoon" is called up, they will reappear continuously in sequence with just the effect of a professional cartoon clip.



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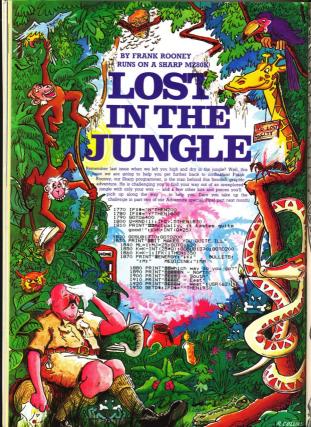
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FD$="N"THENX$="S":F=F-1:G
FD$="S"THENX$="N":F=F+1:G
                                                                          IFD$="5 | THENX$="W":H=H-1: I=I
IFD$="W"THENX$="E":H=H+1: I=I
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                                                                  GOT01930
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IFK<5THEN1350
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RETURN

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GOSUBSAGO

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FRINT'SBYOU were lucky to eascape the piranhas!':60SUB1370180T0200

FRINT'SBYOU made it across the river's piranhas!':60SUB1370180T0200

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FRINT'SBYOU made it is compared to the river's piranhas!':60SUB1370180T0200

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GGT02760 GGT02760 IFSS=0THENPRINT"**88888**You have lost your slingshot - remember?¶"

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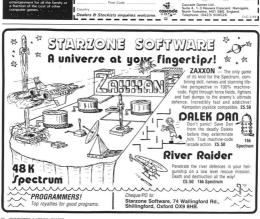
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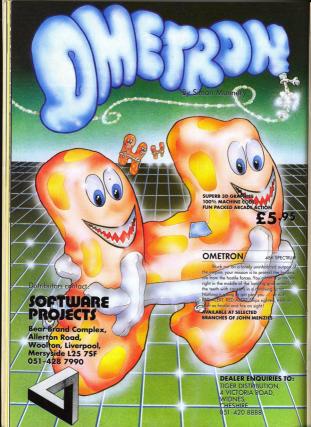
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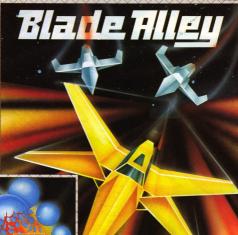
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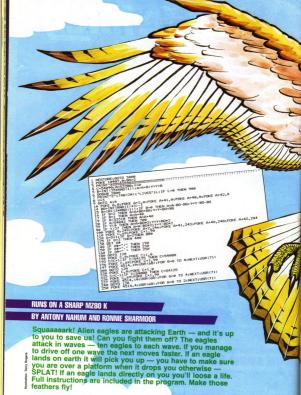
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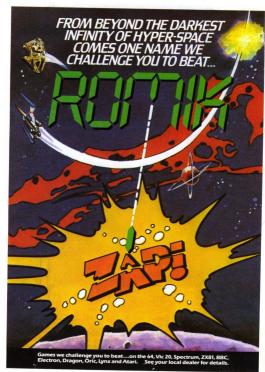


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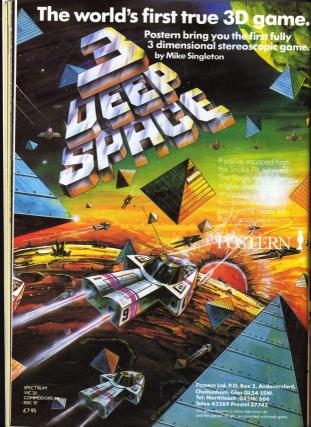


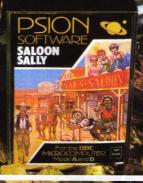
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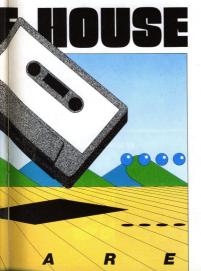




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After skilfully piloting your Jetcopter through a bombardment of Electronic Storms foround & Sea Based Missiles and attack from Armoured Barrage Balloons, you thought ou were safe to complete your mission ... But Nol ... yet another wave of eadly Jet Fighters appear from previous relief self- ... yet another wave of

Only your Hyper-Phase Lasers and amazing arcade skill can keep you alive to compile a task that looks impossible. As the only survivor of a once mighty invasion force you must penetrate deep beyond enemy lines. From a remote island protected by a compile relative screen you must rescue your wounded comrades held captive beside an unstall rescue your wounded comrades held captive beside an unstall rescue your wounded comrades held captive beside an unstall rescue your wounded commands held captive beside an unstall rescue your wounded commands held captive beside an unstall rescue your wounded commands held captive beside an unstall rescue your wounded rescue held captive beside an unstall rescue your wounded commands held captive beside an unstall rescue your wounded commands held captive beside and unstall rescue your wounded commands held captive beside and unstall rescue your wounded commands held captive beside and the properties of the properties

the ultimate in 100% Machine Code Arcade Games from a Master Programmer, achieving a new peak in programming perfection and super smooth movement. Blue Thund sets attounding new standards in Hi-Res Graphics with Pixel Scrolling over 5 different missions, Hi-Score and incredible breathtaking PERSPECTIVE GRAPHICS!

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Name......



DOOMSDAY CASTLE

is an arcade style game with the feel of a real adventure

Doomsday Castle consists of a labyrinth of 76 complexly inter-connected Halls and Passages where you will meet a whole host of adversaries serving the infinitely evil Scarthax, the Garthrogs, the Orphacs, the phenomenally nasty Googly Bird and the Urks which manifest themselves in over lifty unbelievably weird and wonderful guises.

Scarthax has scoured the Universe to bring together the six ancient stones of lifeforce. United in Domotady Castle they are being used to wield an irresistable power over the cosmos, emanating waves of compution through every galaxy.

waves or corruption through every galaxy.

To save the Universe, you must battle your way through the Castle to find and collect the six stones and use their force against

stones and use their force against Scarthax to destroy Doomsday Castle, hopefully escaping yourself before the final cataclysmic explosion. The task is not easy saving the Universe never is! and it will take youmany games to unfold the structure of Doomsday Castle and discover the locations of the ancient stones. The addictive arcade style action will keep you coming back to play but the overall challenge should still keep you occupied for months.

M



shown here above in his exploratory capsule in combat with an Urk disguised a pangalactic gargleblaster [II] This is a true representation of the on-screen graphics.

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RUNS ON AN ORIC-1 IN 48K

BY MICHAEL RUSSEL

Can you avoid the giant charging Rhino as it chases you through the forest? Well, if you can't, don't program in this game because you'll soon be in trouble! The object of the game is simple - dodge the Rhino! You'll find yourself in the forest with a fierce horned animal bearing down on you — how long

can you stay out in front? Your only hope of safety is the Missionary's hut — if you can reach it. the Rhino will be beaten — and you'll be ready for the next chase, when more Rhinos will be

The density of the forest can be changed by altering line 10 and the ferocity of the Rhino in line 20. The initial number of Rhinos can be altered by changing line 25.

1 HIMEM#97FF

- 2 FORN=46368T046375:READA:POKEN, A:NEXT
- 3 DATAB, 1, 62, 28, 28, 28, 29, 20, 38, 38, 12, 63, 12, 12, 18, 33 4 POKE618, 10:.PRINTCHR\$(12):FORN=1T04:PRINTCHR\$(10):NEXT
- 5 FORN=1T014:PRINTCHR\$(9); :NEXT
- 6 PRINT*INSTRUCTIONS?*;GETA\$:IFA\$="Y"THENGOSUB3000

- 7 POKE555, 64
- THIS IS SHORTHAND FORM 8 REM TYPE IN ALL 'PRINTS' AS '?' 9 POKE1293,96 'ENSURE LINE 0 IS INCLUDED-IF NOT THIS WILL CORRUPT L
- INE 1.
- 10 D=450 'DENSITY OF FOREST 20 R=3 'FEROCITY OF RHINOS
- 25 R=1 'INITIAL NO. OF RHINOS

26 REM R<1 THEN RANDOM NO. OF RHINOS DC1 THEN RANDOM DEN. OF FOREST 27 IFR>10THENR=10 28 IFR^1THENR=INT(RND(1)*10)+1 29 IFD(1THEND=INT(RND(1)*1000)+1 38 PRINTCHR\$(12) 35 PAPER4: INK3 'REPLACE THIS WITH:-PAPER(R+1)AND7: INKRAND7-IF YOUR T. V. 36 REM CAN STAND IT! 40 FORN=1T038:PLOTN, 1, 254:PLOTN, 26, 254:NEXT 58 FORN=1T026: PL0T1, N, 254: PL0T38, N, 254: NEXT 68 FORN=0TOD:Q=INT(RND(1)*38)+1:W=INT(RND(1)*26)+1 :PLOTO, N. 254 : NEXT 78 PRINTCHR\$(11)"NO. OF RHINOS="R * · NEXT 98 FORN=3T07:PL0T23, N. " 98 PLOT26, 5, "8" 100 X=INT(RND(1)*5)+2:Y=INT(RND(1)*5)+22 110 IFSCRN(X, Y) C) 32THEN100 128 PLOTX, Y, 164 130 P=R 135 GOT0150 140 P=P-1:IFP>=0THENGOSUB1000ELSEGOSUB1500 150 N=1 155 PLOTX, Y, 164 160 X1=0:Y1=0:K\$=KEY\$ 165 IFK\$="T"THEN30 170 IFK\$="D"THENX1=1 180 IFK\$="A"THENX1=-1 199 IFK#="X"THENY1=1 200 IFK\$="W"THENY1=-1 210 IFK#="E"THENX1=1:Y1=-1 220 IFK\$="C"THENX1=1:Y1=1 230 IFK\$="Z"THENX1=-1:Y1=1 240 IFK\$="Q"THENY1=-1:X1=-1 245 IFSCRN(X+X1, Y+Y1)=48THEN300 250 IFSCRN(X+X1, Y+Y1) <> 32THEN270 260 PLOTX, Y, 32:X=X+X1:Y=Y+Y1 261 FORY=Y-2T0Y+2:SOUND1, V, 15:NEXT:SOUND1, 1, 0 270 N=N+1: IFN<=ATHEN155 275 PLOTX, Y, 164 280 GOT0140 300 PLOTX, Y, 32: PLOTX+X1, Y+Y1, 64 381 FORN=0T05:S0UND1, N. 15:S0U^D1, RND(1)*150, 15:NEXT 385 WAIT50:SOUND1, 1, 0 310 R=R+1 320 G0T030 1000 R1(P)=(INT(RND(1)*36)+2):R2(P)=(INT(RND(1)*25)+2) 1010 IFSCRN(R1(P), R2(P)) <> 32THEN1000 1015 PLOTR1(P), R2(P), 35 1016 U=P:GOSUB1505:CALL#F41B:RETURN 1500 U=0 1505 T=U 1510 M1=0:M2=0 1520 IFX(R1(T)THENM1=-1 1530 IFXOR1(T)THENM1=1 1540 IFY(R2(T)THENM2=-1 1550 IFY)R2(T)THENM2=1 1560 IFXCR1(T)+2RNDXOR1(T)-2THENGOSUB2000 1565 IFSCRN(R1(T)+M1, R2(T)+M2) (32THEN1600

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BOOKWARE

1579 P1(T)=P1(T)+M1 -P2(T)=P2(T)+M2 1589 PLOTR1(T)-M1, R2(T)-M2, 32: PLOTR1(T), R2(T), 35 1600 IFM1*M2<>0THENGOSUB2700 1605 T=T+1: IFT<RTHEN1510 1610 RETURN 2000 IFY(R2(T)+2ANDY)R2(T)-2THEN2010ELSERETURN 2010 POP: PLOTX, Y, 37 2020 FORN=0T0200:SOUND1, N, 15:NEXT:PING 2022 HAIT70 2025 SOUND1, 1, 0 2030 PLOT13, 13, "GAME OVER" 2848 PLOT11, 14, "RNOTHER GRME?" 2850 PLOT14, 15, "(Y OR N)" 2060 R\$=KEY\$: IFR\$="Y"THEN10 .2078 IFR\$\(\times\)"N"THEN2060 2080 CLEAR: CL5: POKE618, 3: END 2700 IFSCRN(R1(T)+M1, R2(T))=32THEN2760 2720 IFSCRN(R1(T), R2(T)+M2)=32THEN2770 2730 RETURN 2760 POP: M2=0: GOT01560 2770 POP:M1=0:GOT01560 3000 PRINTCHR\$(12): INK3: PAPER0 3010 PRINT" "CHR\$(27)CHR\$(4)"J>>>"CHR\$(132) "RHINO"CHR\$(131)"((("CHR\$(4) 3820 PRINT: PRINT: PRINT" THIS IS THE GAME OF RHINO, YOU HRE" 3030 PRINT"A MAN TRAPPED IN THE AFRICAN BUSH. " 3032 PRINT"YOU ARE TRYING TO REACH THE SAFETY" 3834 PRINT"OF A HUT, MOVE THROUGH THE TREES ("CHR\$(254)") 3036 PRINT"AND TRY TO REACH IT. " 3840 PRINT"HONEVER YOU ARE NOT ALONE!!!" 3850 PRINT:PRINT" .IT IS"CHR\$(132)"RHINO"CHR\$(131) "COUNTRY AND AS YOU" 3868 PRINT"HEAD FOR THE COVER, OF THE HUT(8) IN" 3070 PRINT"THE TOP RIGHT HAND CORNER, RHINO (#)" 3080 PRINT"WILL APPEAR, AND A ZAP WILL SOUND. " 3890 PRINT: PRINT" SHOULD YOU REACH THE HUT A NEW 3100 PRINT"BUSHLAND WILL APPEAR, BUT THIS TIME" 3110 PRINT"THERE WILL BE ANOTHER RHINO!!!" 3120 PRINT: PRINT: PRINT" GOOD LUCK. PRESS ANY KEY TO CONT. ":GETA\$:CLS 3121 PRINT 3122 PRINT"SHOULD YOU GET TRAPPED F G *CHR\$(254) CHR\$(254)CHR\$(254) 3124 PRINT"PRESS"CHR\$(134)"/T/"CHR\$(131)"FOR ANOTHER MAZE "CHR\$(254)"\$"CHR\$(25^) 3125 PRINT® "CHR\$(254) CHR\$(254)CHR\$(254)-PRINT 3130 PRINT* "CHR\$(130)"KEYS 3140 PRINT* "CHR\$(133)"==== 3159 PKINT 3160 PRINT® QWE 3170 PRINT" 3189 PRINT" A-"CHR\$(129)"\$"CHR\$(131)"-D 3190 PRINT" 3200 PRINT" ZXC 3210 PRINT:PRINT" "CHR\$(27)"LANY KEY TO BEGIN":GETA\$ 3220 RETURN



2815 IF ATTR (NY, NX) =57 THEN GO TO 2850 PRINT INK C;AT NY, NX -1; """: BEEP. 85, -8: PRINT INK (;AT NY, I'": BE EP. 85, -3: PRINT INK (;AT NY, NX; EP. 85, -3: PRINT INK (;AT NY, NX;

EP ... 00, --
EP ... 00, --
Segs RETURN

Seed LET DAY 1307 (980 A13)3 -57

SEED LET DAY 1307 (980 A13)3

LET M=M+1 IF M(3 THEN GO TO 4700 GO TO 3225 FOR X=1 TO TO AMENT 3040 3070 3100 3110 FOR X=1 TO 10: NEXT X 3110 RETURN 3200 LET hy=2:INT (RND:7):3 3210 PRINT INK 4;RT hy,2;;

7,20: PRINT INK 7; AT hy,2;

SEED IF NOT THEN RETURN
1821 LET NOT THEN RETURN
1821 LET NOT THEN BO TO 4700 PM.
1822 LET NOT THEN BO TO 4700 PM.
1822 LET NOT THEN BO TO 4700 PM.
1824 LET NOT THE N



BY DAVID HEALFY

RUNS ON A SPECTRUM IN 48K

SEE IT 9.09 AND Ny=2 THEN GO TO 3000 IF 9.09 THEN RESTORE 9900 AND RESTORE

4000 PAUSE 100 4010 INK 7: PA PAPER 0: BRIGHT 1: C Lace PRINT "DEERNIA"

BEEP 1.0 PRINT |
4030 PRINT "RIVE |
4030 PRINT "RIVE |
4030 PRINT "STATUS REPORT:" BEE |
7.10 PRINT |
7.10 PRINT |
4040 PRINT "STATUS REPORT:" BEE |
7.10 PRINT |
4050 PRINT "Puel rods recovered: 1020 PRINT "OPERATIVE DECEASED: BEEP .1,0: PRINT



4050 PRINT "Mission success: "; INT (rs/14*100); "%": BEEP .1,0: PRINT : PRINT : PRINT : P RINT 78 PRINT "Press:": PRINT : PRI "1: For mission instructions. PRINT "2: To start.": BEEP .1 4878 PRI 4080 IF INKEYS="1" THEN GO TO 92 ABOO IF INKEYS "2 THEN O TO SO ABOO IF INKEYS "2 THEN O TO SO LINE OF TO ABOO IS: PRINT OT NY. 17 INK 52"; INK. 19T NY. 17 17 INK 52"; INK 5 40 0 720 GD TO 4710 730 CL5 : GO TO 9010 740 PRINT INK 1;AT 0 1756 BORDER O: PRINT RT NY, NX;
1800 17 (10) THEN GO TO SIGO
1801 LET (10) THEN GO TO SIGO
1801 THEN GO TO SIGO
1802 PRINT INK 2; RT NY, NX; TO
1802 PRINT INK 2; RT NY, NX; TO
1804 PRINT INK 1801 TO SIGO
1804 PRINT INK 1804 TO SIGO
1804 PRINT INK 1

NEXT Y INK 1: BORDER 2: E

CLS CLS COMPLETED: Seze PRINT "MISSION COMPLETED: BEEP 110: PRINT 5030 PRINT "Allrods recovered. Station now safe. Congratulations.": B

SED .1.0 CONGRAUGATIONS.:

SOAR PRINT: PRINT: PRINT: PRINT:

NT: PRINT: PRINT: PRINT:

SERS ED TO 1878 BIGHT 8: CLS

BOOS LET C=0: LET ny=19: LET nx=

15: LET T=0: LET 9x=4: LET B=0:

SEL PRINT: NK 1;

SEL PRINT: NK 1;

20 PRINT INK 1;""": FOR X=2 T 28 STEP 2: PRINT AT 1,x; INK 3 FLASH 1;"0"; INK 1; FLASH 0;" NEXT X: PRINT AT 1,30; INK 1; 0; 9030 PRINT INK 1;" "; INK 7 INK

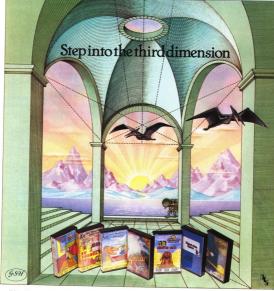
1935 FOR 4=3 TO 15 STEP 2: PRINT 197 (197) 187 (197) PRINT

INK 9045 PRINT INK 1, "", INK 7, "",
INK 1; " ", INK 1, "",
1 INK 7; " , INK 1, "",
9050 PRINT INK 1, "", INR 7; INK

HMI PRINT AT 20,X; INK 25 PRINT INK 28 STEP 2: P ;"•"; INK 1;" T 20,30; INK 060 PRINT INK TNK

PRINT INK GO TO 1000 STOP CLS AT ny,nx;"\$" 9199

INK 6: PAPER 0: BORDER 0:



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Personal Computer News (15-21 Sept '83) gave SUPER SKRAMBLE! an overall rating of NINETEEN OUT OF TWENTY and described it as: "Well implemented

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9210 PRINT "LOCATION: ": BEEP M215 PRINT 9220 PRINT "A FULLY AUTOMATED NU CLEAR POWER STATION PATROLLED BY GUARDIAN ROBOTS AND PROTECTED BY A LASER DEFENCE MECHANISM,": BY 9 BEEP 9225 9236 PAUSE SOO CLS PRINT "PROBLEM: ": BEEP .5,1 9235 9240 PRINT 9245 PRINT LFUNCTION. PRINT "FUEL ROD HANDLING MA ALL RODS EXPOSED. TIME TO CRITICAL RAD RUNAWAY CONDITION: U IDACTIVE PAUSE 800 PRINT "MISSION: ": BEEP .5,1 PRINT 9270 PRINT "YOUR HISSIGN SHOULD YOU DECIDE TO TAKE IT IS TO EN ER THE POWERSTATION AND MOVE TH FUEL RODS INTO PROTECTIVE LEA ENT INTO CONTAINERS 9275 PAUSE 9280 CLS 9285 INK 5 BEEP .5.10 PRUSE SOO PRINT "TOP SECRET": BEEP .5 10 SOLD PRINT 1: The Just rods are to cated at the top of the Screen they have flashing radiation will be to cated at the top of the screen they have flashing radiation will be to cate of the top of the screen to cated at the screen to 2: The lead containe situated in a corrid base of the screen." the 9325 PRINT ... RINT
"S: You must transported to these containers no thelaser fire and guar both.": BEEP 5,18
RINT: PRINT transpor t the rod avoiding ian robot guard ien robot. 9340 PRINT 9345 PRINT "Press X to select fro(s." 350 IF INKEY\$="x" THEN BO TO 93 9355 GO TO 9350 CLS : INK PRINT "COI PRINT "CUI 9360 9365 9370 CONTROL SELECTION: "CURSOR KEYS (Press C PRINT "KEMPSTON J/ST J)": BEEP .5,10 EY\$="(" THEN GO TO 94 9375 PRINT PRINT (Press INKEYS="C" T ICK 9380 9385 IF INKEY \$=" j" THEN GO 28 GO TO 9380 LET j=2000 GO TO 9000 LET j=2050 GO TO 9000 STDP 3400 9410 9500 9505 9510 FOR 0 = 0 TO 168 PERD POKE USR "a"+n,a 9936 1435 RETURN #550 RETURN \$700 DATA 0,BIN 00001000,BIN 000 11180,BIN 00101101.BIN 00001000, \$1150,010100,BIN 00010100,BIN 00 \$1150,010100,BIN 00010100,BIN 000 \$705 DATA 0,0,0,0,0,0,0,BIN 0000 117 1000 1710 DATA BIN 00011100,BIN 00101 100,BIN 00001000,BIN 00010100,BI 1 00010100,BIN 00010000,0,0 1715 DATA 0,0,0,0,BIN 00001000,B 1715 DATA 0,0,0,0,BIN 00001000,BIN 000 9955

31000 ATF BIN 00010100 BIN 00010 100 BINT 00001010 0000 00 10 00 10 00 100 BINT 0000100 00000 00 00 00 00 20010 BINT 0000010 BIN 0000011 100 0000010 BIN 0000010 BIN 0000011

7730 DATA 0,BIN 01000000,BIN 010 20000,BIN 01100000,BIN 11000000,

21000

| Section | Sect 9820 PAPER 0 9822 LET J=0 9825 FOR 4=1 TO 4: TF INK y J=30 THEN GO 9830 LET 200 BEEP J=J+1: PRINT AT 0. 10 3 850 865 PRINT 870 PRINT PRINT 3898 PRINT PRINT

RIN .. 2020 DDTM 33.

PRIMER PRINT

SS PRINT " A SYNACROOP SOFTWAR PRODUCTION" 78 PRINT 78 PRINT PRINT PRINT PRINT

NEXT GO T GO TO 9825 9200 0880 60 TO 9200 1990 DATA 3.4.3.4.3.4.5.6.7.8.9 1.7.6.5.6.7.6.5.6.7.8.9.10.11.12 13.14.15.16.17.16.17.16.15.44.1 1.13.14.13.14.13.12.13.14.15.16.1 7.16.17.16.17.16.17.16.19.20.21.22.23 24.24.23.24.23.24.28.26.27.26.2 524

```
@ PRINT""
      PRINT "MUELCOME TO PLANET CHARRK BY IAN HUGHES"
    2 PRINT "=-
    3 GOSUB9030
    5 POKE54296,0:POKE53281,2:POKE54276,0
    6 RESTORE : CLR
    19 PRINT
    20 PRINT "WHELCOME TO PLANET CHARRY BY IAN HUGHES"
    21 PRINT "#-
    30 V=53248
    31 POKEY+16, 9
    35 POKEV+21.1
    40 POKE2040, 13
    45 FORN=0T062:READQ:POKE832+N.Q:NEXTN
    50 DATA0.255.0.1,219,128.3.219,192,7,231,224.15.25,240
    55 DATA123.0,222.79.0.242.75.0.210.71.255.226 226.126.71.161.90.133
    60 DATR160.231.5.1.231.128.1.60.128.2.24.64.4 (8.32.8.126.16
    65 DATA112,255,14,241,255,143,240,0,15,96,0,6
    70 POKEV+23.1:POKEV+29.1
   80 POKEY, 130: POKEY+1, 75
   81 PRINT: PRINT: PRINT: PRINT: PRINT: PRINT
   90 PRINT" /F1'=MAIN ENGINES 'F3'=1/2 ENGINES"
    100 PRINT"
                     'Z'=LEFT 'X'=RIGHT"
   101 PRINT"#
                    TIO NOT HIT ANY GREEN WALLS"
   102 PRINT"
                      LANDING PADS 'sees'"
   193 PRINT
   104 PRINT"⊾ SREMEMBER -- THE HARDER THE LOCATION AND
   105 PRINT" SOFTER THE LANDING. THE MORE THE POINTS"
   110 PRINT"M
                     PRESS ANY KEY TO START"
   120 GETA$: IFA$=""THEN120
   135 POKEV+21.0
   136 POKEV+23.1:POKEV+29.1
   140 PRINT"T
   150 FORY=1T02:PRINT:NEXTY
   155 PRINT"#"SPC(16)" _
   159 PRINT"#"SPC(16)"/ \"
   160 PRINT" "SPC(11)"/
                              \"SPC(4)" - "SPC(5)"F\
   170 PRINTER
                 \"SPC(9)"/
                                MSPC(4)"1 1"SPC(5)"1/
   188 PRINTER
                  \"SPC(8)"|
                                 /"SPC(4)"1 1"SPC(5)"11
   190 PRINT'S
                   \"SPC(7)"|
                                 1 1"SPC(5)"11
   200 PRINT"N
                    \"SPC(5)"/"SPC(12)"| "SPC(5)"| \
  210 PRINT"
                     "SPC(4)" /"SPC(13)"| "SPC(5)"| 1
  220 PRINT'S
                     "SPC(4)"| "SPC(13)"| "SPC(5)"| |
  230 PRINT"S
                     240 PRINT"S
                    /"SPC(4)"1"SPC(8)" |"SPC(10)"| |
  250 PRINT'S
                   /"SPC(5)"|"SPC(8)"/"SPC(10)"| |
  260 PRINTER
                  /"SPC(6)"|"SPC(7)"/"SPC(10)"/ |
  270 PPINT"S
                 /"SPC(5)" ~ "SPC(7)" | "SPC(9)"/
  280 PRINT'S
               "SPC(6)" L "SPC(7)" I "SPC(4)" C
  290 PRINTER
              | "SPC(6)" | | "SFC(7)"| "SPC(4)"|
  300 POINT" / "SPC(6)" |"SPC(7)" 1
  310 PRINT"# | "SPC(7)" /"SPC(20)" |
  328 PRINT"
  321 PRINT: PRINT
  339 F=799:GP=9
  340 X1=24:Y1=58:P0KEV,X1:P0KEV+1,V1
 350 POKEV+23.0:POKEV+29.0
 360 POKEV+21,1
361 GOSUB 370:GOTO361
 370 [FY1 588NDPEEK(V+31)=1THEN431
 371 IFF<0THEN431
 372 IFY1C2THEN 431
 106 COMPUTER & VIDEO GAMES
```



7001 IFGR>1THENPOKE54296.0 7010 IFGR)ITHENPRINT"∎YOU LANDED BUT YOU HIT RATHER TO HARD" 7828 IFGR>1THENPRINT"SO SORRY BUT YOUR WOUNDS ARE VERY BAD" 7030 IFGR>1THENPRINT"MIND YOU I LIKE THE 5 MILE CRATER IDEA" 7841 IFGR 1THENGOTO8102 7842 PRINT"MMELL DONE YOU LANDED SAFELY" 7943 IFGRC=0THENRG=10 7044 IFGR(=, 2ANDGR) 0THENRG=9 7945 IFGR>=, 3THENRG=7 7046 IFGR>=, 7THENRG=3 7047 IFGR>=, 8THENRG=1 7849 P%=RG*P+(RND(8)*5)+1:P=P% 7050 POKE54296, 15 7051 POKE54277, 9: POKE54276, 33 7059 FORT=1T030:NEXT 7965 PEANUE 7966 READLE 7077 IFLF=-1THENPOKE54273,0:POKE54272,0:GOT07081 7078 POKE54273, HF: POKE54272, LF 7980 POKE 54276,0:GOTO7051 7081 FORC=1T010 7083 PRINT" 7085 PRINT"TWA GOOD LANDING #POINTS:";P;"" 7087 F0PV=1T0100:NEXTV:NEXTC:00T08102 7100 DATA22, 227, 25, 177, 28, 214, 22, 227, 19, 63, 22, 227, 28, 214, 22, 227, 19, 63 7111 DATA22, 227, 28, 214, 38, 126, 38, 126, 36, 85, 34, 75 7112 DATA22,227,25,177,28,214,22,227,19,63,22,227,28.214,22,227,19,63 7113 DATR22, 227, 28, 214, 38, 126, 38, 126, 36, 85, 34, 75, -1, -1 8000 POKE54296, 15 8050 FORYY=1T02 8051 FORY=1T020 8065 POKE53281,0:POKE53281,1:POKE53281,0 8869 NEXTY 8070 POKE54296.15:POKE54277,17:POKE54272.1:POKE54276.129 8072 POKE54273, (3*RND(0))+5 8082 POKEV+28,1:FORX=1T0300:POKE54278,32:NEXT:POKEV+28,0 8085 POKEV+21,0 8986 POKE54276.0:POKE54277.0 8087 POKE53281.2 8192 PRINT 8183 PRINT"ANOTHER GAME Y OR Nº 8184 POKE198.8 8119 INPLITAS 8129 FOR C=1TO LEN(A\$): IFMID\$(A\$,C)="Y"THENRUN 8121 NEXTO 8130 PRINT"BYE THEN" : END 9000 IFPEEK(197)=4THEND=15 9001 IFPEEK(197)=5THEND=10 9006 POKE54296, D: POKE54277, 9: POKE54278, 128 9897 POKE54276, 129: POKE54273, 6: POKE54272, 18 9015 RETURN 9030 PRINT"∄ YOU ARE ON A MISSION FOR THE FEDERATIONNHEN ALL OF A SUDDEN YOU 9040 PRINT" DETECT A FAULT ON BOARD YOUR SHIP, THERE IS ONLY ONE COURSE OF 9850 PRINT" ACTION, YOU MUST ATTEMPT A FORCED LANDING ON THE PLANET QUARRY." 9868 PRINT"FOR YOU THERE ARE SEVERAL DIFFICULTIES: 9070 PRINT" MM1. WITHERE ARE ONLY A FEW LANDING SITES" 9080 PRINT"MM2. WITHE GRAVITY IS STRONG, PULLING YOU TO 9090 PRINT"XM3. MYOUR ENGINES ARE SPLUTTERING AND USING FUEL QUICKLY" 9100 PRINT"MM4. MYOU MUST LAND GENTLY USING 1/2 ENGINES" 9110 PRINT"#5, WITHE HALLS ARE MADE OF ANTI-MATTER, THEY ARE DEADLY TO TOUCH" 9111 INPUT"MAPRESS RETURN KEY"; AS: RETURN 108 COMPUTER & VIDEO GAMES



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KWAZY KWAKS

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PRINT"" 2 PRINT"*****SKIER*****

3 PRINT" * BY MARK VASEY ** 4 PRINT"#############

5 PRINT"Z=LEFT":PRINT"C=RIGHT"

7 PRINT"MPLEASE WAIT"

10 POKE51, 255: POKE52, 27: POKE55, 255: POKE 56.27 20 FORT=0T0511

30 POKE7168+1, PEEK (32768+1): NEXT 35 FORT=RT046 READA

40 POKE7168+T+(N#8) . A: NEXT 50 POKE36869,255

60 DATR24,60,90,153,60,90,153,24 78 DATA0, 0, 2, 1, 1, 29, 17, 209

80 DATR24, 24, 30, 26, 18, 16, 25, 254 98 TATA24, 24, 120, 88, 72, 8, 152, 127

100 DATA24, 153, 219, 189, 153, 24, 90, 231 110 DATA9, 16, 56, 145, 124, 16, 108, 0

120 POKE36879,25:POKE36878,15

BY MARK VASEY **BUNS ON A**

VIC-20 IN 3.5k

130 Z=7756:T=7:C=38476:W=36877:Q=36876 D=36878:H=0 131 PRINT" TARREINSTRUCTIONS": PRINT" #SKI DOWN SLOPE AVOIDING: -"

132 PRINT" XNE SEPECTATORS" 133 PRINT"NOWN MOEAD SKIERS"

134 PRINT"MEND STREES": PRINT"SWINT ALSO TURNS DARK AT 200 AND 300METRES" 135 GETAS: IFASO ""THEN137 136 GOTO135

137 PRINT"J":F0RP=135T0241:P0KEQ.R:NEXT

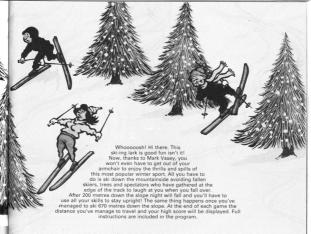
138 FORU=0700 139 SC=SC+1: IFSC=22THENPRINT" STANDARD CONTROL

140 T=T+H 141 POKEW 241

142 IFSC=200THENPOKE36879.8

143 IFSC=500THENPOKE36879.8 144 TESC=670THENPOKE36879, 25 150 IFT=OTHENT=1

160 IFT=STHENT=7



PROGRAM NOTES:

10-20: characters. 130-135: instructions. 137-160: ground movement. 200-230: man movement. 310-335: checks for collisions. 340-396: end routine.

```
170 PRINTTAB(T) "SEIDBBBBCE"
189 POKEZ+X-22,32 POKEZ+X,32
200 IFPEEK(197)=33THENX=X-1:POKEZ+X,3
    : V=1 : POKED, 15
219 TEPFEK(197)=34THENX=X+1:POKEZ+X.2
211 6070310
229 POKEZ+X, 4: POKETI, 8
238 POKEC+X.6
 235 FORP=1T010 NEXTP
 248 N=INT(RNB(1)#22)+1
 241 V=[NT(RND(1)*2)+1
 242 POKE38905-N. 6-V
 243 POKE8185-N, V-1
 249 NEXTU
 250 F=INT(PNT(1)#3)+1
 DER TEF=1THENH=1
 270 IFF=2THENH=-1
 280 TEF=3THENH=0
 298 D=INT(PND(1)#7)+1
 388 GOTO138
```

318 TEPEEK (7+X+22)=8THEN348

```
320 IEPEEK(Z+X+22)=5THEN350
   230 TEPEEK (74%+22)=1THEN360
  335 TEV=1THENY=0:00T0230
  336 GOTD220
  340 PRINT" THING STAYOU RAN IN TO A TREE BOOK
      G0T037A
  350 PRINT"THE SMYOU RAN IN TO A
      SPECTATOR ": GOTO370
 350 PRINT" TRIBETTAVOLL PAN IN TO
     A DEAD
 365 POKE36879, 25
 379 IFSCOHITHENHI-SC
 371 PRINT" MRWOULL TRAVELLED ":SC:
     PRINT" METRES"
 972 T=7:X=0:H=0
375 POKEW, 0: FORP=241T0135STEP-1: POKEO. P:
    NEXT : POKEO, 0
376 PRINT" SMHIGH DISTANCE"; HI
388 PRINT"MOSPHOTHER GO? (Y/N)"
390 GETAR: [FAR="V"THENSC=0:PRINT"]":
   6070138
```

395 TEAS="N"THENPRINT"JÆVE!" END

396 0070398



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· A new force field is generated after every third wave of alien attackers has been destroyed. Also after every third alien attackers has been destroyed. He speed and numbers of aliens increase — but you do get bonus points for every three waves — but you do get bonus points for every three waves — but you do get bonus points are a set instructions are

you manage to wipe out. Full instructions are included in the program.

RUNS ON A DRAGON 32

BY IAN MATHER

- REMARKABLIENAKKARITACKAKK REMAKBY # * I AND # MATHER # # *
- GOSUB7000
- 0. GOODER (180) 10 D DIRK (2,2), E(2,2): PLRY*T255V31* (H5*199: REHELEVEHNELE 30 LINE(0,179)-(295,192), PSET, BF
- 40 FORN=30T0226STEP98

- (0) (1987-1983) EEP (1985-1983) EEP (1985-1983
 - 110 GET(0,0)-(7,7),A
 - 120 DRAW-C2BMO, SBR2D7R2U7D3R2L6D1R6

 - 50 MAGNICHIES | 1105P200181+2, +101F21HL004* | PSET(2, 2, 3) | PSET(4, 2, 3) | SC=0 | E-1 140 LINE(0,0)-(20,20), PRESET, BF 146 FORE55494, 0: X=16: Y=10: ME=4: RR=9: N=0 150 IFB>5THENB=5
- (59) IT #500 ITEM #55 153 (C.1.) = \$2.000 | MET2: IFME > 9 THE METE = 9
- 150 OLD 1 PREFERENCE P 156 DRAW"EM232, 188"+A#(ME)
- 105 html: "Bright, Her-Hilder)
 105 Line (2016)
 105 Line (2016) LOW FUNCTION COLUMN, S.LIMBEC (T-1 MANGRES, 1757-CC PROFILE PROFILE (T-1 MANGRES, 1767-CC PROFILE PROFILE (T-1 MANGRES, 1767-FRE PROFILE (T-1 MANGRES, 1767 188 FORT=1105 L(1)=RND(12)+14 Hz 198 PUTCX18,Y#S)-(X#8+7,Y#S+7),B
- TO TORREST TORREST AND SERVICES TO THE TORREST 100 PULL STREET, TREET, 341)=2239EC/OTHERMSY-1. COSUB1000: LINECKIS, (YM1 280)=CKISA7.



220 IFPEEK(342)=223ANDY(20THENY=Y+1:GOSUB1000:LINE(X#8,(Y-1)#8)-(X#8+7,(Y-1)#8+7 240 IFPEEK(343)=223ANDX)@THENX=X-1:GOSUB1000:LINE((X+1)#8,Y#8)-((X+1)#8+7,Y#8+7) 260 IFPEEK(344)=223RMDX(31THENX=X+1:GOSUB1000.LINE((X-1)*8,Y#8)-((X-1)*8+7,Y#8+7 280 R=VAL(INKEY\$): IFA(10RA)3THEN450 300 IFC(A)XITHEN460 320 U=(A-1)*98+30 340 LINE(U, 167)-(X#8+3, Y#8+4), PSET 368 C(R)=C(R)-1 380 COLOR4,3:INE(U-4,178)-(U+4,172),PSET,BF:COLOR2,3 400 DRHW"BM"+STR#(U-4)+",178"+A#(C(P)) 420 SOUND235,3 425 FORJ=1TOB .'27 IFF(J)=1THEN435 430 IFX=0(J)ANDY=R(J)THEN2000 435 NEXT 440 LINE(U, 167)-(X#8+3, Y#8+4), PRESET 450 NEXT 460 FORT=1TOB: IFF(T)=1THEN490ELSEPUT(L(T)#8,M(T)#8)-(L(T)#8+7,M(T)#8+7),A 464 LINE(Q(T)#8,R(T)#8)-(Q(T)#8+7,R(T,#8+7),PRESET,BF 465 Q(T)=L(T):R(T)=M(T) 470 M(T)=M(T)+1:L(T)=L(T)+INT(RND(0)*2-RND(0)) 480 IFM(T)=21THEN3000 490 NEXTT 500 IFF(1)+F(2)+F(3)+F(4)+F(5)=B THEN5000 900 G0T0200 1000 PUT(X#8,Y#8)-(X#8+7,Y#8+8),B:RETURN 3005 COLOR4,3:LINE(232,188)-(240,180),PSET,BF:COLOR2,3:DRAW"BM232,188"+AMK(ME-1) 3010 F(T)=1:ME=ME-1:IFPE(1THEN6000 3015 LINE(Q(T)#8,R(T)#8)-(Q(T)#8+7,R(T)#8+7),PRESET,BF:SCREEN1,0:G0T0490 4000 A#=STR#(SC):COLOR4,3:LINE(60,180)-(94,180),PSET,BF:COLOR2,3:DRRW"BM60,188": FORE=2TOLEN(A\$):DRAW A\$(VAL(MID\$(A\$,E,1)))+"BB4":NEXT:RETURN. 5000 W≃W+1:P0KE65495,0 5010 POKE65493,0:IFRR>4ANDW>1THENRR=RR-.5 5020 IFW/3=INT(W/3)THENFORN=1T010:SC=SC+RND(W):SOUND100,1:GOSUB4000:NEXT:B=B+1:P OKE65494, 8:FORN=1T031STEP3:FORN=1T018STEP2:PLRY"02V"+STR#(N)+";"+STR#(NN):NEXTN 6000 SCREEN1, 0: FORN-1T04000: NEXT 6004 IFSC>HS THENHS=SC 6005 IFINKEY\$=""THEN6005ELSE20 6010 AM=STR#(HS):COLOR4,3:LINE(118,182)-(158,188),PSET,BF:COLOR1,3:DRAN"EM120,18 8":FORE=2TOLEN(As):DRAMAS(VAL(MIDS(As,E,1))>+"BR4":NEXT:COLOR2,3:RETURN 7010 PRINT PRINT" alien attack" EARTH IS UNDER ATTACK AND IT IS UP TO YOU YOUR CITY CAN BE DEFENDED BY ALIENS. IS UP TO YOU TO STOP THE . WHICH ARE FIRED BY PRESSING THE '1', '2'0R'3' 7020 PRINT" TO KILL THE 'NVADERS YOU MUST KEY. " FIRE ONE OF THE LAZERS." POSITION THE SIGHT ON TARGET BND 7030 PRINT:PRINT" PRESS ANY KEY TO CONTINUE" 7035 SCREENO, 1 7040 IFINKEY\$=""THEN7040 7050 CLS:PRINT:PRINT" IF THE ALIENS REACH THE GROUND THEY WILL BE STOPPED BY A FORCEFIL'.D(IF THERE IS ONE). EVERY 3 WAVES OF ALIEN A NEW GENERATED" 7060 PRINT" IF THERE IS NO FORCEFIELD THEN YOU AND YOUR CITY WILL TO MAKE THINGS WORSE FOR YOU D OF THE ALIENS WILL INCREASE. THE NUMBER AND SPEE EVERY 3 MAVES BONUS POINTS L BE AWARDED" 7070 PRINT" press any key to start" 7075 SCREEN0,1 7030 IFINKEY\$=""THEN7080 7090 RETURN

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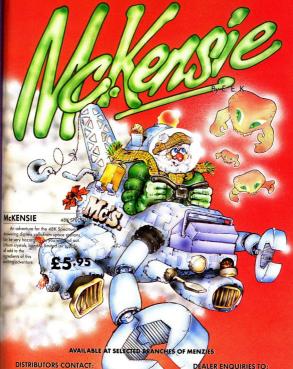
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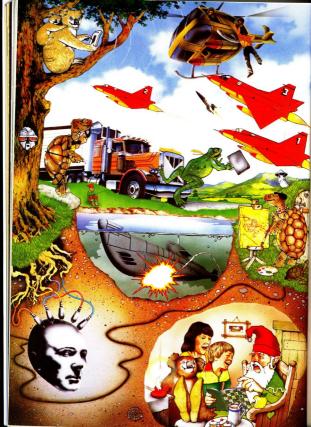


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In another time, another world, not too far away from your own front room, you can be in command of . . .

1. Zaxxon by Datasoft.

You're the pilot. Climbing, diving, swooping in on an enemy fortress. A barrage of missiles and gunfire will try and stop you. Just when you think you're through, a powerful robot's lethal homing missile zaps you...or does it?

2. Frogger by Sierra On-Line.

Now you're a frog stranded a long way from home. A perilous journey awaits you. Once across the busy motorway, a surging river full of logs, turtles and alligators awaits. Better flex those Froggy leg-muscles though, the bank is steep, so look before you leap!

3. KoalaPad Touch Tablet by Koala.

You can't overfeed this Koala - he'll make his own menu selections. He'll also move game players.

make musical notes, draw computer graphics and much more. The KoalaPad Touch Tablet is an accessory that'll enhance the capabilities of your home computer system.

4. Sea Dragon

by Adventure International.

Take a deep breath - you'll need it to navigate your sub through a labyrinthian underwater passage to free the menace of the imprisoned Sea Dragon. Mines, electrifying eels and lethal laser beams await you in this murky underwater world. You've limitless torpedoes, but limited air, so hurry! 5. Turtle Graphics II by HesWare.

This Turtle's about to paint the town red. Or green. Or blue with pink spots. By teaching him to paint, draw and colour he'll teach you, painlessly and enjoyably, the basics of computer programming - maths, logic, communications and more with over sixty commands. Ideal for children from six to sixty.

6. Choplifter by Broderbund.

Sixteen hostages are holed up in an inaccessible barracks. Only an ace chopper pilot can free them - you!

Watch out for the tanks, they'll crush anything. They're just for starters - fighter jets and the awesome homing air-mines are yet to come. Good luck . . . vou'll need it!

Kids and the Apple/Atari by Datamost.

These books will teach you, simply, how to write your own programmes. Step-by-step instructions teach you how to create your

own action, board and word games. Programme your finances or even learn another language - whatever you do, you'll get the most out of your home computer.

8. Suspended by Infocom

20 miles beneath the earth's surface your brain is wired to a computer network. You'll strategically manipulate 6 robots to overcome a myriad of realistic and original problems as you try to maintain surfaceside equilibrium. But don't worry, the end is in sight - you're only there for 500 years!



Phew, back to earth! Now beam yourself over to your local dealer and check out his software. He's got just about everything, we should know, we supply it.



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BY DAVID WATERFIELD

RUNS ON A BBC IN 32K

Reversi, like chess, is one of the most popular board

game conversions among micro owners. The rules for the Beeb version are exactly the same as the standard game - the difference is that in this version you are up against the computer and not a human opponent. The rules of the game are very simple. You can

place one of your pieces next to a counter of your own colour. Each player takes alternate turns to place a counter on the board. If any player can't move or doesn't wish to move for tactical reasons, the play can be passed to the opponent. The object of the game is trap a row of your opponent's counters between your pieces. If you succeed, all the pieces that have been captured change to your playing colour. The best winning tactic is to occupy as many of the corner squares as you can. This puts you in a powerful position, allowing you to attack the computer's pieces without endangering your own counters.

At the beginning of a game, you are given the option of moving first or allowing the computer to do so. To enter a move simply press the number of the square you wish to move - followed by the corresponding letter. Illegal moves will be rejected and if you cannot move you should enter "I"

At the end of a game, when the board is full or when neither player can move, the score is added up and the winner announced.

10 MODE 1: MV=4: PM%=0 20 PROCarrays

30 PROChoand

49 PROCumove

50 IF A\$="n" THEN PRINTTAB(7 29)SPC30;TAB(7,29)"";:PROCrandom GOTO 520

60 IF A\$<>"u" THEN 40 78 GOTO 98

80 PRINTTAB(8,29)SPC10; TAB(7, 29)"Move illegal !";:T%=TIME:REP EATSOUND&11,-15,51-.25*(TIME-TX) TLTIME-T%>200: #FX15,1 PRINTTAB(0,29)SPC5;TAB(18,

29)SPC20; TAB(7,29)"Your move ?"; :Y\$=GET\$:PRINT;Y\$;",";:X\$=GET\$:P RINT; CHR\$((ASC(X\$))0R32); :Y=VAL(Y\$):X=(ASC(X\$)0R32)-96

100 IF X=0 AND Y=0 THEN 90 110 IF X=9 AND Y=9 THEN PM%=1: G0T0350

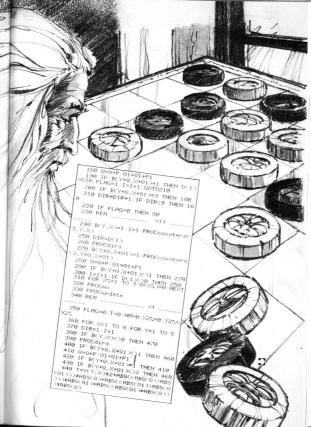
120 IF X>8 OR X<1 OR Y>8 OR Y< 1 OR INT(X)<>X OR INT(Y)<>Y THEN 90

130 REM

140 DIR=1: I=1:FLRG=0

150 IF B(Y,X)<>0 THEN 80

160 PROCdira 170 IF B(Y+Q,X+Q1 X>3 THEN 210



450 IF TOHM OR X=X2% AND Y=Y2% THEN D(I)=DIR: I=I+1:D(I)=0:FLAG =1:HM=T:X2%=X:Y2%=Y

460 DIR=DIR+1: IF DIR(9 THEN 39

470 NEXT: NEXT

480 IF FLAG=0 THEN PRINT TABG? ,29)SPC(20);TAB(7,29)"I can't mo ve ! ";:T%=TIME:REPEATUNTILTIME-T%>300: #FX15,1

490 IF FLAG=0 AND PM%=1 THEN P ROCend ELSE PM%=0

500 IF FLAG=0 THEN 90 510 REM ___

520 PRINTTAB(17,29)SPC(10); TAB (7,29)"My move ";Y2%;",";CHR\$CX2 %+96);:Y=Y2%:X=X2%:*FX15,1 530 PROCcounters(1,Y,X):D%=INK

540 B(Y,X)=3: I=1: PROCcounters(

0, 4, 8) 550 DIR=D(I)

560 PROCdirs 570 B(Y+0,X+01)=3:PROCcounters (0, Y+0, X+01)

580 Q=Q+P:Q1=Q1+P1

590 IF B(Y+0, X+01 X >3 THEN 570 600 I=I+1:IF D(I)<>0 THEN 550 610 FORXX=1 TO 9:D(XX)=0:NEXT 629 PROCMV

630 XFX 15.1 640 GOT090

650 REM

660 DEF PROChoard

670 VDU 19,13,6;0;19,2,2;0;:GC 0,129:CLG:GCOL 0,2:COLOUR 129 COLOUR 0: Y2=-1 680 IF RND(1)>.5 THEN 700

690 FOR XX=-1 TO 400 STEP 4:MO VE 640-XX,562+YX:DRAW 640+XX,562 +Y%: DRAW 640+X%, 562-Y%: DRAW640-X %,562-Y%:DRAW 640-X%,562+Y%:Y%=Y 2+4:NEXT:G0T0710

700 MOVE 240,162:MOVE 240,162: PLOT 85,1040,162:PLOT 85,240,162 :PLOT 85,1040,962:PLOT 85,240,96

710 GCOL 0,0:FOR XX=240 TO 104 0 STEP 100 MOVE X%, 962 DRAW X%, 1 62: NEXT: FOR Y%=162 TO 962 STEP 1 00:MOVE 240, Y%:DRAW 1040, Y%:NEXT 728 As="abcdefqh": VDU 5:FORX%= 1 TO 8:MOVE XX*100+170,1002:PRIN

T;MID\$(A\$,X%,1):MOVE 200,ABS(X%-9)*100+122:PRINT;X:NEXT:VDU 4 FOR YX=362 TO 762 STEP 400:FOR X1%=XX-5 TO XX+10:MOVE X1%, YX+8:

DRAW X1%, Y%-7: NEXT: NEXT: NEXT 740 PROCcounters(3,4,4):PROCco unters(3,5,5):PROCcounters(0,4,5):PROCcounters(0,5,4)

750 ENDPROC 760 DEF PROCarrays

770 DIM B(9,9), V(8,8), D(9), Q(8),P(8)

789 X%=0

790 FORX%=1 TO 8:FORY%=1 TO 8: READ V(Y%, X%): B(Y%, X%)=0: NEXT: NE

800 FORX%=0 TO 9:B(0, X%)=-1:B(9,X%)=-1:B(X%,0)=-1:B(X%,9)=-1:N EXT: B(4,4)=1:B(5,5)=1:B(4,5)=3:B (5.4)=3

810 FOR X%=1 TO 8: READ .Q(X%):N EXT:FORX%=1 TO 8:READ PCX%):NEXT



The BBC Micro can now give your children a private education.

The BBC Microcomputer now accounts for 80% of the computers being ordered under the current D.O.I. Primary School Scheme.

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Now, there's a substantial new catalogue of educational programs specially for the BBC

Microcomputer.

It has been developed by Acomsoft, the software division of Acom Computers who manufacture the BBC Micro.

Making faces without getting scolded.

With the new Facemaker program, your children can make over a million faces. It's like an identi-kit, allowing them to depict anyone they want. They start by choosing the eyes. Then they can choose the mouth, the ears, the nose, the facial outline and the hairstyle.

And if they really fancy dressing up, they can add earnings and hats.

In doing all this, they learn to read and spell, as well as developing their powers of description.

The money program, two games for the price of one.
Mr. T. is an engaging little figment of the microchip
who can teach your children all the complexities of our
coinage system.

His Money Box program has two games, each of which can be played at different levels.

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In Money Box, you can give your child and Mr. T. a helping hand to get all the coins on the screen into the box. (Its always different, because the coins on the screen are based on the small change you have to hand.) A chance to teach the Micro a thing or two.

With the Animal, Vegetable, Mineral program, the children can get the computer guessing.

They think of an object. The BBC Micro has to decide what it is.

If it doesn't come up with the answer, the children can keep giving it hints.

In doing so, they are encouraged to question the difference between such things as crocodiles and alligators, or whether oil is vegetable or mineral.

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ence books so that they can ask the computer increasingly tough questions.

Questions on Julius Caesar from J. Julius Norwich, John Julius Norwich's History Quiz is one of the new BBC Micro Grandmaster quiz series which also covers theatre, crime and detection, music, science fiction and royalty.

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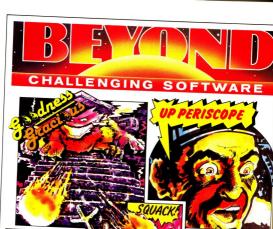
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840 PRINTTAB(7,29)"Do you want

to move 1st ?";:A\$=GET\$:A\$=CHR\$ ASC(A\$)0R32) 850 ENDPROC

860 DEF PROCdirs

870 0=0(DIR):01=P(DIR):P=0:P1=

880 ENDPROC

890 DEF PROCcounters(C.B.A) 900 X1=A*100+190:B=ABS(B-9):Y1 =B*100+112:GCOL 0.C:Y%=-1

910 FORX%=-1 TO 30 STEP4:MOVEX



1+XX, Y1+YX: DRAWX1+XX, Y1+YX: DRAWX

1-XX, Y1+YX DBBWX14 SOUND FIDERWAY 2#(XX+2),1:NEXT 920 ENDPROC

930 DEF PROCNY 940 MV=MV+1

950 IF MV=64 THEN PROCEND 960 ENDPROC

970 DEF PROCrandom 980 XZ%=RND(4)+2:YZ%=RND(4)+2 990 IF X2%+Y2%=7 OR X2%+Y2%=11 THEN 1000 ELSE 980

1000 IF Y2%=6 THEN D(1)=1 1010 IF Y2%=4 THEN D(1)=3

1020 IF YZX=3 THEN D(1)=5 1030 IF Y2%=5 THEN D(1)=7 1949 ENDPRO

1050 DEF PROcend 1060 B%=0:W%=0

1070 FORX%=1T08:FORY%=1T08 1080 IF B(Y%, X%)=3 THEN B%=B%+1 1090 IF B(YX, XX)=1 THEN WX=WX+1

1100 NEXT NEXT 1110 IF BX>WX THEN PRINTTAB(7,2 9)"I win by ";B%-W%;" counters." SPC10:END

1120 IF WX>B% THEN PRINTTAB(7,2 9)"You win by ";W%-B%;" counters

1130 PRINTTAB(7,29)"A draw. "SPC

1140 END 1150 ENDPROC

1160 DEF PROCupdate 1170 FORP%=2 TO 7

1180 T1=B(P%-1,1):T2=B(P%+1,1):

1190 IF T3=4 THEN V(P%, 1)=15 1200 IF T3=1 AND B(P%,1)=0 THEN

1210 IF T3=6 OR T3=2 OR T3=3 TH EN V(P%, 1)=100 1220 T1=B(P%-1,8):T2≈B(P%+1,8):

1230 IF T3=6 OR T3=2 OR T3=3 TH EN V(P%,8)=199

1240 IF T3=4 THEN V(P%,8)=15 1250 IF T3=1 AND B(P%, 8)=0 THEN PROCLine2

1260 T1=B(1,P%-1):T2=B(1,P%+1): T3=T2+T1 1270 IF T3=6 OR T3=2 OR T3=3 TH

EN V(1,P%)=100 1280 IF T3=4 THEN V(1,P%)=15 PROC11ne33=1 AND B(1,PX)=0 THEN

1300 T1=B(8,P%-1):T2=B(8,P%+1): T3=T2+T1

1310 IF T3=6 OR T3=2 OR T3=3 TH EN V(8,P%)=100 1320 IF T3=4 THEN V(8,P%)=15 1330 IF T3=1 AND B(8,P%)=0 THEN PROCline4

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1,1,1,0,-1,-1,-1 1390 DEF PROCline1

1400 IF B(PX-1,1)=1 THEN S=-1:E =1 ELSE S=1:E=8

1410 FORL=P%+S TO E STEP S 1420 IF B(L,1)=3 THEN V(P%,1)=1

50 1430 IF B(L,1)=3 AND B(L+S,1)=0

THEN L=2*E*S:G0T01470 1440 IF B(L,1)=0 OR B(L,1)=1 OR

B(L,1)=-1 THEN V(P%,1)=15

1450 IF B(L,1)=0 THEN L=2*E*S 1460 NEXT

1470 ENDPROC

1480 DEF PROCline2

1490 IF B(P%-1,8)=1 THEN S=-1:E =1 ELSE S=1:E=8

1500 FORL=P%+S TO E STEP S 1520 IF B(L,8)=3 AND B(L+S,8)=0 THEN L=2*E*S:G0T01560

1660 DEF PROCline4

1670 IF B(8,P%-1)=1 THEN S=-1:E =1 ELSE S=1:E=8

1680 FORL=P%+S TO E STEP S 1690 IF B(8,L)=3 THEN V(8,P%)=1

1700 IF B(8,L)=3 AND B(8,L+S)=0

THEN L=2*E*S:G0T01749

1710 IF B(8,L)=0 OR B(8,L)=1 OR B(8,L)=-1 THEN V(8,P%)=15

1720 IF B(8,L)=0 THEN L=2*E*S 1739 NEXT

1740 ENDPROC



1 SCREEN=1 2 L=5 3 HI=-1 5 XX=10:YY=10 REM IN LINES 13,31,37,40 & 5000, % SHOULD BE IN 9 REM IN LINE 40 & 4020, a SHOULD BE IN INVERSE 10 GOSUB 18000:GOSUB 30000:N=1 11 GOSUB 5000 12 XX=10:YY=10:COLOR ASC("0"):PLOT XX,YY 13 FOR G=0 TO SCREEN-1:COLOR ASC("%"):PLOT 0+G, 1+G: 460 DRAWTO 19-G, 1+G: DRAWTO 19-G, 23-G 14 DRAWTO 0+G, 23-G: DRAWTO 0+G, 1+G: NEXT G 15 SETCOLOR 0,8,2:SETCOLOR 1,14,5 16 SETCOLOR 3,0,0 17 SETCOLOR 2, 3, 4 18 SETCOLOR 4, 0, 10 19 IF N=1 AND STICK(0)=15 THEN 19 21 GOSUB 500 24 IF RND(0))0.93 THEN GOSUB 4000 25 IF RND(0))0.93 THEN GOSUB 2000 32 REM IN LINE 34, SCORE SHOULD BE IN INVERSE 34 N=0:Q=Q+1:POSITION 0,0:? #6;"SCORE ";Q 37 SOUND 0, 121, 10, 10: COLOR ASC("x"): PLOT XX, YY: COLOR ASC("@"):XX=XX+H:YY=YY+V 38 TRAP 3000 40 LOCATE XX, YY, A: IF A=ASC("%") OR A=ASC("q") THEN 41 REM IN LINE 42, LIVES SHOULD BE IN INVERSE 42 POSITION 11, 0: PRINT #6; "LIVES "; L; " " 43 IF A=ASC("z") THEN Q=Q+10:FOR I=1 TO 5:SOUND 0, 5, 2, 10: NEXT I: FOR I=1 TO 5: SOUND 0, 10, 2, 10: NEXT I 45 IF L(1 THEN POSITION 3, 9: PRINT #6: "GAME OVER !!" 46 PLOT XX, YY: T=0: SOUND 0, 0, 0, 0 48 IF Q) 100+SCREEN THEN SCREEN=SCREEN+1:L=L+1:GOTO 11 50 GOTO 21 500 IF STICK(0)=14 THEN ST=1 520 IF STICK(0)=7 THEN ST=3 540 IF STICK(0)=13 THEN ST=5 560 IF STICK(0)=11 THEN ST=7 580 IF ST=1 THEN V=-1:H=0:RETURN 600 IF ST=3 THEN H=1:V=0:RETURN 520 IF ST=5 THEN V=1:H=0:RETURN 640 IF ST=7 THEN H=-1:V=0:RETURN 2000 J=INT(20*RND(0)) 2010 K=INT(20*RND(0))+4 2020 COLOR ASC("z"):PLOT J, K:RETURN 3000 IF XX (0 THEN XX=0 3010 IF XX) 19 THEN XX=19 3020 IF YY (4 THEN YY=4 3030 IF YY> 23 THEN YY=23 3035 0=0-1 3040 GOTO 46 4000 J=INT(20*RND(0)) 4010 K=INT(20*RND(0))+4 4020 COLOR ASC("q"):PLOT J,K: 5000 IF A=ASC("%") THEN L=L-1:Q=Q-1: FOR I=1 TO 100: SOUND 0, 255, 10, 10:NEXT T:SOUN D 0,0,0,0:XX=XX-H: Y=YY-V: RETURN 5010 L=L-2:Q=Q-1 5020 FOR I=15 TO 0 STEP -0.5 \$ 5025 SETCOLOR 4,15, I 5030 SOUND 0, 55, 8, I:NEXT I:SETCOLOR 4, 0, 10 5035 COLOR ASC(" "):PLOT XX+H, YY+V 5040 RETURN 5050 GOTO 5050 136 COMPUTER & VIDEO GAMES

Briky is a happy little bricklayer. He's never more content than when he's got a wall to build. But there are things that upset him - bombs and moles. Both are capable of destroying his carefully constructed walls. You can help Briky build a brave new world by guiding him around the screen. You cannot stop - so you have to be careful not to bump into your own walls. Occasionally those moles nd bombs appear at random on the screen. If you build your wall over a mole, you'll get a bonus of 10 points. If you hit a omb, you'll lose two of your five lives. After every 100 points you get a bonus life and a new screen to play in. But each screen gets smaller - making Briky's life harder. Full instrucins are included in the prog5000 FOR G=0 TO 15:COLOR ASC(" "):PLOT 0+G, 0+G:DRAWTO 19-G, Ø+G: DRAWTO 19-G, 23-G 5010 DRAWTO 0+G, 23-G: DRAWTO 0+G, 0+G: NEXT G: RETURN 7000 IF Q) HI THEN HI=Q 7005 FOR I=1 TO 500:NEXT I:GOSUB 30000 7010 L=5:Q=0:SCREEN=1:GOTO 11 18000 REM NEW CHAR SET 18010 REM ********* 18015 RESTORE 18320 18020 DIM A(8), ANS\$(3), R\$(1), F\$(15), NAME\$(12), ANS2\$(3) 18040 MEMTOP=PEEK(106):GRTOP=MEMTOP-4 18060 POKE 106, GRTOP: GRAPHICS 1+16: CHROM=PEEK(756)*256 18140 CHRAM=GRTOP*256:POKE 756,GRTOP 18210 FOR N=0 TO 1023: POKE CHRAM+N, PEEK(CHROM+N): NEXT N 18260 FOR K=1 TO 4: READ R\$: R=ASC(R\$) 18270 IF R(32 THEN R=R+64 18280 IF R (96 THEN IF R) 31 THEN R=R-32 18300 FOR I=0 TO 7:READ A:A(I)=A:B=I+R*8+256*GRTOP: POKE B. A: NEXT I: NEXT K 18320 DATA % 18330 DATA 126, 126, 126, 0, 231, 231, 231, 0 18335 DATA @ 18340 DATA 126, 129, 165, 129, 195, 189, 129, 126 18350 DATA Z 18360 DATA 126, 255, 219, 255, 255, 231, 219, 255



18380 DATA 4, 8, 16, 24, 126, 255, 126, 24

20000 XX=XX-H:YY=YY-V:RETURN

18370 DATA 0

18500 RETURN

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30002 GOSUB 6000 30003 POSITION 0, 1

30005 REM ALL OF THE FOLLOWING SHOULD BE PRINTED IN

INVERSE, EXCEPT z & start 30006

30007 ? #6;" " 30008 ? #6;" "

30009 ? #6:" 30010 ? #6;" %% %% % % z % %" 30020 ? #61" % % % % % % % % % % %

30030 ? #6;" x x x x x x x x xzx" 30040 ? #5;" xx xx x xx %" 30050 ? #6;" x x x x x x xxq 70 38060 ? #6;" %z% % % % % % % 76.11

38070 ? #6;" %% % % % % % %q %" 30080 ? #6:" "

30085 ? #6;" hi score = ";HI+1

30087 ? #6:" " 38090 ? #6;" PRESS start TO PLAY" 30100 IF PEEK(53279)()6 THEN 30100

30120 RETURN



SCREEN=1 2 L=5 3 HT=-1

5 XX=10:YY=10

8 REM IN LINES 13, 31, 37, 40 & 5000, % SHOULD BE IN

9 REM IN LINE 40 & 4020; 9 SHOULD BE IN INVERSE 10 GOSUB 18000:GOSUB 30000:N=1 11 GOSUB 6000

12 XX=10:YY=10:COLOR ASC("a"):PLOT XX, YY 13 FOR G=0 TO SCREEN-1: COLOR ASC("%"): PLOT 0+G, 1+G:

DRAWTO 19-G, 1+G:DRAWTO 19-G, 23-G 14 DRAWTO 0+G, 23-G: DRAWTO 0+G, 1+G: NEXT G

15 SETCOLOR 0, 8, 2: SETCOLOR 1, 14, 5

16 SETCOLOR 3, 0, 0 17 SETCOLOR 2, 3, 4

18 SETCOLOR 4, 0, 10 19 IF N=1 AND STICK(0)=15 THEN 19

21 GOSUB 500 24 IF RND(0))0.93 THEN GOSUB 4000

25 IF RND(0))0.93 THEN GOSUB 2000 32 REM IN LINE 34, SCORE SHOULD BE IN INVERSE 34 N=0:Q=Q+1:POSITION 0.0:? #6:"SCORE ";Q

SOUND 0, 121, 10, 10:COLOR ASC("%"):PLOT XX, YY:COLOR ASC("@"):XX=XX+H: 38 TRAP 3000

40 LOCATE XX, YY, A: IF A=ASC("%") OR A=ASC("q") THEN GOSUB 5000 41 REM IN LINE 42, LIVES SHOULD BE IN INVERSE

42 POSITION 11, 0: PRINT #6; "LIVES ";L;" " 43 IF A=ASC("z") THEN Q=Q+10:FOR I=1 TO 5:SOUND 0.5,2,10:NEXT I:FOR I=1 TO 5: SOUND 0, 10, 2, 10: NEXT I

45 IF L(1 THEN POSITION 3,9:PRINT #6; "GAME OVER!!":GDTD 7000

46 PLOT XX, YY: T=0: SOUND 0, 0, 0, 0

48 IF Q) 100 *SCREEN THEN SCREEN=SCREEN+1:L=L+1:GOTO 11 50 GOTO 21 500 IF STICK(0)=14 THEN ST=1

520 IF STICK(0)=7 THEN ST=3 540 IF STICK(0)=13 THEN ST=5

560 IF STICK(0)=11 THEN ST=7 580 IF ST=1 THEN V=-1:H=0:RETURN

600 IF ST=3 THEN H=1:V=0:RETURN 620 IF ST=5 THEN V=1:H=0:RETURN

640 IF ST=7 THEN H=-1:V=0:RETURN 900 SPEED=0. 7





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1100 DATA 243,72,0,0,1 1110 DATA 96,000,0,0,1 1120 DATA 121,00,0,0,1 1130 DATA 60,00,00,0, 1 1135 REM

1140 DATA 144, 47, 0, 0, 1 1150 DATA 60, 47, 0, 00, 1 1150 DATA 121,47,0,0,1 1170 DATA 50, 00, 0, 00, 1

1175 RFM 1180 DATA 162,72,0,0,1 1190 DATA 108,72,0,0,1 1200 DATA 121,72,0,0,0,0.5 1210 DATA 76,00,00,0,0,0,5 1220 DATA 72,00,00,0,0.5 1230 DATA 68, 00, 00, 0, 0.5

1235 RFM 1240 DATA 152, 54, 0, 0, 1 1250 DATA 000,53,0,0,1 1260 DATA 128,60,0,0,1

1270 DATA 000,64,0,0,1 1275 REM 1280 DATA 193,72,0,0,1

1290 DATA 000,81,0,0,1 1300 DATA 114,85,0,0,1 1310 DATA 000,81,0,0,1 1315 REM

1320 DATA 217,64,0,0,1 1330 DATA 81,64,00,0,1 1340 DATA 121,72,85,0,1 1350 DATA 108,00.0,0,1 1360 DATA 152,64,0,0,1

1370 DATA 81, 64, 00, 0, 1 1380 DATA 128,54,0,0,.5 1390 DATA 62,000,0,0,5

1400 DATA 57,000,0,0,.5 1410 DATA 53,00,00,0,05 1415 REM

1420 DATA 40, 128, 0, 0, 1 1430 DATA 53,00,00,0,0,1 1440 DATA 60, 108, 0, 0, 1 1450 DATA 54,00,00,0,1 1455 REM

1450 DATA 243,72,0,0,1 1470 DATA 000,72,0,0,1

905 RESTORE 1000 910 TRAP 30120: READ A. B. C. D. E 912 IF E=0.5 THEN E=0.35

915 SOUND 1, B, 10, 7 917 SOUND 2, C, 10, 7 918 SOUND 3, D, 10, 7

920 FOR I=15 TO 2 STEP -(SPEED/E) 930 SOUND 0, A, 10, I

950 NEXT I:F=F+1:GOTO 910

1000 DATA 152, 54, 0, 0, 1 1010 DATA 81, 64, 00, 0, 1

1020 DATA 128,64,0,0,.5 1030 DATA 60,000,0,0,.5 1040 DATA 57, 000, 0, 0, 5

1050 DATA 53,00,00,0,0,5 1.055 REM

1060 DATA 40, 128, 0, 0, 1

1070 DATA 53,00,00,0,0 1080 DATA 50, 108, 0, 0, 1 1090 DATA 64,00,00.0,1

1095 REM



1480 DATA 121,00,0,0,1

1490 DATA 60,00,00,0,1 1495 RFM

1500 DATA 153, 47, 0, 0, 1 1510 DATA 64, 47, 00, 0, 1 1520 DATA 108,47,0,0,1 1530 DATA 53,000,0,0,1 1535 REM

1540 DATA 144,57,0,0,1 1550 DATA 000, 60, 0, 0, 1 1550 DATA 121,64,0,0,1 1570 DATA 000,72,0,0,1 1575 REM

1580 DATA 217, 81, 0, 0, 1 1590 DATA 000,85,0,0,1 1500 DATA 108, 54, 0, 0, 1

1610 DATA 000,72,0,0,1 1615 REM 1520 DATA 162, 72, 0, 0, 1

1630 DRTR 65, 72, 00, 0, 1 1640 DATA 81, 128, 0, 0, 1 2000 J=INT(20*RND(0)) 2010 K=INT(20*RND(0))+4 2020 COLOR ASC("z"):PLOT J, K:RETURN

3000 IF XX (0 THEN XX=0 3010 IF XX) 19 THEN XX=19 3020 IF YY (4 THEN YY=4

3030 IF YY) 23 THEN YY=23 3035 Q=Q-1





```
3040 GOTO 46
  4000 J=INT(20*RND(0))
  4010 K=INT(20*RND(0))+4
  4020 COLOR ASC("q"):PLOT J, K: RETURN
  5000 IF A=ASC("x") THEN L=L-1:Q=Q-1:FOR I=1 TO 100:SOUND 0,255,10,10:
       NEXT I:SOUND 0, 0, 0, 0:XX=XX-H:YY=YY-V:RETURN
  5010 L=L-2:Q=Q-1
  5020 FOR I=15 TO 0 STEP -0.5
  5025 SETCOLOR 4, 15, I
  5030 SOUND 0,55,8,1:NEXT 1:SETCOLOR 4,0,10
  5035 COLOR ASC(" "):PLOT XX+H, YY+V
  5040 RETURN
  5050 GOTO 5050
  5000 FOR G=0 TO 15:COLOR ASC(" "):PLOT 0+G, 0+G:DRAWTO 19-G, 0+G:DRAWTO
 5010 DRAWTO 0+G, 23-G: DRAWTO 0+G, 0+G: NEXT G: RETURN
 7000 IF Q) HI THEN HI=Q
 7005 FOR I=1 TO 500:NEXT 1:GOSUB 30000
 7010 L=5:Q=0:SCREEN=1:GOTO 11
 18000 REM NEW CHAR SET
 18010 REM economicolomous
 18015 RESTORE 18320
 18020 DIM A(8), ANS$(3), R$(1), F$(15), NAME$(12), ANS2$(3)
 19040 MEMTOP=PEEK(106):GRTOP=MEMTOP-4
 18050 POKE 106, GRTOP: GRAPHICS 1+16: CHROM=PEEK(756) +256
 1814@ CHRAM=GRTOP+256: POKE 756, GRTOP
 18210 FOR N=0 TO 1023: POKE CHRAM+N, PEEK(CHROM+N): NEXT N
 18260 FOR K=1 TO 4: READ R$: R=ASC(R$)
 18270 IF R(32 THEN R=R+64
 19280 IF R (96 THEN IF R) 31 THEN R=R-32
 18300 FOR I=0 TO 7:READ A:A(I)=A:B=I+R*8+256*GRTDP:POKE B.A:NEXT I:NEXT K
                                18320 DATA %
                                18330 DATA 126, 126, 126, 0, 231, 231, 231, 0
                                18335 DATA A
                                19340 DATA 126, 129, 165, 129, 195, 189, 129, 126
                                18350 DATA Z
                               18362 DATA 126, 255, 219, 255, 255, 231, 219, 255
                                19370 DATA 0
                                18380 DATA 4, 8, 16, 24, 126, 255, 126, 24
                               18500 RETURN
                               20000 XX=XX-H:YY=YY-V:RETURN
30000 SETCOLOR 0,8,2:SETCOLOR 2,3,4:SETCOLOR 4,0,10:SETCOLOR 1,14,5:
      SETCOLOR 3, 0, 0
30002 GOSUB 6000
30003 POSITION 0,1
30005 REM ALL OF THE FOLLOWING SHOULD BE PRINTED IN INVERSE, EXCEPT z &
30006 ? #6:" "
30007 ? #6:" "
30008 ? #6;" "
30009 ? #6;"
30010 ? #6;" %% %% % % %
                           z % %"
30020 ? #6;" % % % % % % % % % %
30030 ? #6:" x x x x x x x x x xzx"
30040 ? #6; " %% %% % %%
                               70
30050 ? #6;" x x x x x x xxq
                              %"
30060 ? #6;" xzx x x x x x
                              1/10
30070 ? #6:" %% % % % % % % %
30080 ? #6;" "
30085 ? #6;" hi score = ";HI+1
30087 ? #6;" "
30090 ? #5;" PRESS start TO PLAY"
30100 IF PEEK(53279) (),6 THEN 30100
```

30120 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0:RETURN 144 COMPUTER & VIDEO GAMES

30110 GOTO 900

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148 COMPUTER & VIDEO GAMES

This issue of Computer and Video
Games is choc-a-bloc with masses of
great games listings — 48 extra fun
filled pages — so let's not hang about!
Program Extra has two tips for microprogrammers and a new feature,
Down to Basics, but let's kick off with
a look at David Waterfield's game for

the BBC — Reversi.

avid Waterfield's game Reversi is a very good example of a well written program, tackling difficult problems with excellent ideas and short snappy programming. This is highlighted by David's approach to solving the problem of without having up the playing beard without having up the playing beard without having long the problem of the playing beard without having long the problem of the playing beard to write a bear play compact little routine to do the really compact little routine to do the

This has inspired Program Extra to encourage you to get programming. So we have come up with a short procedure to create a chess or draughts board on the BBC computer. The program can be easily modified to suit your needs. And if you feel like creating a brand new board game of your own it will help too!

his short program for the BBC demonstrates how it's possible, with a good programming style, to write short listings to solve problems that appear to be complex and tiresome

Drawing a chess board is an excellent exercise to attempt, because it involves some tricky problems, but also requires the programmer to structure the routine or else succumb to writing reams of code and end up with a very messy game. The program uses two loops, one to draw each row of squares and the other to draw each column.

The IF ... THEN statements are used to decide if a row begins with a black or white square and variables are used throughout to carry the drawing co-ordinates and the colour to be used for filling. Furthermore, the entire routine is held in a defined procedure which can be easily incorporated into any program with ease. IOMODE4

20Y = 150.X = 150
30A = 1.T = 100
40PROCBOARD
50END
50END
70FORE = 1708
80FORC = 1708
90IFC MOD2 = A THEN GCOLO,OELSE
GCOLO,7

GCOLO,7 100MOVEX,Y:DRAWX,Y+T 110DRAWX+T,Y+T 120PLOT85,X+T,Y+T:X+T 130NEXTC

140Y=Y+T:X=150

150IFR MOD2=1 THEN A=0 ELSE A=1 160NEXTR

170ENDPROC

In our last issue, Down to Basics discussed the merits and demerits of Basic and its rivals. This month we'll be taking a closer look at Basic's structure and hopefully get a greater understanding of how it operates. First of all we should take a look at the heart of all computers, the microprocessor:

he microprocessor is the most important chip in a computer. If you've ever seen inside a micro, chances are that the largest chip in there would have been the microprocessor itself. It is also known as the Central Processing Unit, or CPU and this name helps you understand what it does.

does.

The CPU is the chip which controls all the others and which actually does the work when you run your program. If a calculation needs doing, which happens hundreds of times every second, the numbers are brought from the memory chips into the CPU which does the work, and then places the answer back into a memory chip.

Whenever you see something moving across the screen in a game, it is the CPU which is controlling that movement. The way it's done is to put the character you wish to move at a point on the screen. Then, after a very short delay, crase it and put it slightly further along. If you keep doing this fast enough the object will appear to move.

The important thing to realise about the CPU is that, although it can work very fast (it could easily handle many thousands of long multiplications in less than a second), it can only do one thing at a time. So if your computer is playing a game of Pacman, the computer can't move that ghosts around the screen make the sound effects and check to see what keys you're pressing all at the same time. Programmers get round this problem by making the CPU do each job for a short time in turn. If the program is well written, this should happen fast enough to give the impression that all is happening at once.

hat about winds it up for this issue except to remind you that if you have any problems with the listings in C&VC, or just want to learn more about how the games work, drop Program Extra a line to Computer and Video Games, Durrant House, 8 Herbal Hill, London ECIR SEJ.

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JAPAN

Once upon a time, Namco was a rather obscure company which manufactured small fairground rides which were placed on the top of department stores to keep the kids happy while their mums went shopping.

The turning point came when Namoo bought up Atari Japan Inc. in 1974. Although Atari was the world leader in the video game industry at that time, it did rather badly in Japan due to lack of experience.

Despite some financial difficulties at the outset Namco went on to do some basic research into the American video games technology.

So it was not until 1977 that their first product, Galaxians invaded the Japanese arcades. The timing was just right. People were getting fed up with the original Space Invaders and wanted something new

Galaxians did exceedingly well but their best seller was still a gleam in a hungry software experts eye. When Namco released Pacman the company's profits rocketed.

The idea of Pacman was devised by one of Namco's software specialists. One day he was so hungry that he imagined himself eating a pizza. This train of thought led him to picture a pizza with a piece cut off, looking as if the bigger portion was trying to eat the smaller one. Then he thought to himself: "Why not write a game about eating?" "Why not write a game about eating?"

From this bright idea Namco's development team added various ideas such as the ghosts and the power pills and unleashed a little yellow monster on the world!

Contrary to the popular belief Pacman is Japanese; Atari merely holds the rights to produce the home computer and home video versions.

All in all the game took about 12 months to develop. The name Pacman derives from the Japanese word "paku paku" which describes the movement of the mouth when eating.

The reason for the great commercial success of Pacman — apart from the originality of the game — is attributed to

Japan was the only country in the world which bed to min more coin in order to salisty the enormous demand created by the arcade boom caused by the original Space invader machines. The company which created those lirst invader machines made a huge killing while arcade centres and even machines mader caffee houses sprans and the machines mader. Caffee houses sprans and the machines mader in the caffee in t

All this led to the creation of more than 200 companies trying to cash in on the very lucrative arcade industry. This is a story of one such pioneer of the arcade video games, Namco. Virtually unknown in this country, Namco is the most excit-

country, reatinct is an invest extening arcade company in Japan.
When the Space Invader boom began to wane, the game was quickly followed by the Galazian.
This development of the alien a vader theme was an instant success. Galazian was Namoc's refers divide game and since then the company have gone from strength to strength. Tom Sato looks at the Japanses video boom.

the fact that Namco licensed two American companies to produce Pacman for the U.S. market.

Thanks to Atari, the U.S. market is about five times that of Japan and about 10 times that of Europe. Namco licensed Midway to produce

the coin operated arcade machines and Atari to sell the home video game versions of Pacman. Atari splashed out on a national T.V.

advertising campaign and soon Pacman became a household word. The sales of the Pacman cartridge can only be described as explosive! Namco earned millions from the royalties.

The reason why Atari sued Commod-

the lar

ore and others over breach of copyright of Pacman is simple. While Atari paid millions to Namco, Commodore and the rest of the copycats didn't pay a cent.

But the licensing of Pacman didn't stop at the video games. Soon, there was Pacman sports gear and Pacman toys everywhere.

It is said that Namoo earned more than three times as much from royalties generated by the Pacman character than from the actual video game! Time magazine commented, in April 1982, that Pacman's income will exceed that of the movies Starwars!

Apparently, one comflake manufacturer put a Pacman picture on the packaging and the sales took off.

However, all is not well for Namco. In Japan, there are people who pirate arcade games. Although it may appear to be rather difficult to produce "clones" of sophisticated arcade machines, there are a number of technological pirates about in Japan.

Namoo has no less than 20 full-time detectives investigating piracy, using sophisticated spying equipment to catch the pirates.

Last year, Namoo developed the now hugoly successful Aira; game called hugoly successful Aira; game called Pole Position. The development of Pole Position or the development of Pole Position or the development of the three-quarters of a million pounds and has some of the mosponents of the mosponents of the mosponents of the mosponents of the policy successful and the mosponents of the mo

It sounds incredible — but within two months, there were pirated Pole Positions available on the black market at half the price of the original!

This time Namco was determined to catch the pirates red handed so they sent out all of their detectives to monitor known secret laboratories and hide

The whole operation came to a dramatic Hollywood style end when they tailed a truck believed to be on its way to pick up a consignment of illegally produced Pole Position machines.

They eventually reached a secret factory 1,000 miles away from Tokyo and apprehended several pirates and confiscated 20 "clones", renamed Top Position. Sounds like something out of The Sweeney, doesn't it?

So how do the pirates make these "clones"? As soon as an original arcade machine is released they get hold of one and disassemble it, obtaining photographs of the printed circuit boards and names of the chips it uses. The custom-made chips are opened

of the rising clone



up and analysed using micro-photographic equipment. Once they work out how the chip works they then produce a circuit to do exactly the same thing.

This process is called "reverse technology" and the ironic thing is that much of Japanese industry started off using this technique.

The pirates who analyse the originals are quite skilled, and are sometimes engineers working for large computer manufacturers and moonlighting. They are equipped with mainframe computers and electronics equipment costing hundreds of thousands of pounds. They see creating a "clone" as a challenge.

They pass-on the information to other pirates whose exclusive function is to set up an overnight factory in a remote part of Japan and mass produce the "clones". The marketing is handled by other pirates who specialise in this field. The whole operation is master-minded by organised crime syndicates.

They regard arcade piracy as being safer than drug trafficking.

Namco has just released a sequel to Pole Position called Pole Position Pt II. It gives you choice of four racing circuits and the backgrounds are more detailed than before.

Most arcade players in Japan really

Most arcade players in Japan really go in fir convincing backgrounds and in Pole Position Pt II, there is one circuit which has a multi-level crossing and a fairground with a big wheel and rollercoasters! Also the car crashes in a more realistic fashion. You see the car break up into bits while the wheels bounce away from the crash if you are unlucky enough to go off the road.

Just recently, two companies released laser-disc motor-racing games and it looks as if Namco could have been outsmarted by them.

Taito's Laser Grand Prix (C&VG, November) uses Laser vision which provides actual scenes from Fuji Speedway. The visual and sound effects are superb. Tarm has a Pole Position-like game with no less than three screens to fill the whole of your field of view!

But one arcade fanatic commented that Namco always comes up with something really original. I think he is right. In 1984 I believe that Namco will release something extraordinary using laser technology. The current trend in arcade games in Japan are sport simulations. There are now arcade games which feature anything from water-skiing to women's volleyball! It is very likely that there will be a convincing flight simulator game next

Another trend is towards micro computer software. Due to the fact that Sinclair's cheap micros never reached Japan and Atari's absence from Japanese home video game system market meant that the games software industry for home micro is relatively new in Japan.

Since there is a law in Japan to protect arcade games there is a lack of computer games converted from the arcade favourites. There is an awful lot of illegal stuff about, though!

Sega Enterprises — they made Frogger, Zaxxon and Buck Rogers, Planet of Zoom — have produced their own micro called the Sega 3000 to sell their

original arcade games.

Namco too has joined forces with one of the leading software distributors called Dempa. Their first offering was, predictably, Pacman!



	AZING SOFTWA PHONE ORDERS	RRP		OIL OIL HING	NOW FUN FU	LL DETAIL	LS
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Xadom	Psion Quicksilva	7.95	7.50	Panic 64 Crazy Kong	Interceptor	7.00	5.
Aquaplane	Quicksilva	6.95	5.95	Fragger Fragger	Interceptor	6.95	5.
Bugaboo Flea	Quicksilva	6.95	5.95		Interceptor	6.95	5.
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Gridrunner Panic	Quicksilva	4.95	5.95 5.95		Llamasoft	7.50 7.50	6.5
Hopper Hopper	PSS	5.95	5.25	Hower Bower	Llamasoft	7.50	6.5
Krazy Konn	PSS	5.95	5.25	Gridrunner	Llamasoft	5.00	4 5
Light Cycle	PSS PSS	5.95	5.25	The Hobbit 64 Arcadia	Melbourne House	14.95	12.5
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GAMES MACHINE



If you want to extend the capabilities of your computer or games machine there are now lots of bits and pieces which you can plug into the back to make it do things better or faster, or things which it could never do before. Such plug in podies include extra memory, better keyboards, ystick interfaces, Micronet adaptor or devices to make the beast speak or play tunes. Robert Schifreen takes a break from Bug Hunting to bring you news of some of the current plastic boxes which you can plug into your micro or games machine. Upgrading your present equipment by using add-ons means that you may not have to buy that new machine after all!

COMMUNICATIONS Communications means making your micro talk or listen to other computers

in their own language. They communicate either over the airwaves at radio frequencies or over the telephone lines. Each has its advantages. Radio communication is only one-way whereas telephone can be both. But long conversations on the phone can be expensive. If you want to read more about this

subject, dig out November's issue of C&VG and turn to page 114. If you want to receive Teletext on your micro, you'll need a BBC model B with a Teletext adaptor. This lets you

receive Ceefax and Oracle, which are information services broadcast by the BBC and by ITV. You just plug your TV aerial into the back of the adaptor, and the computer will do the rest. The adaptor gives you four channels

of teletext information; BBC1, BBC2, ITV and Channel 4. You can find out about such things as what's on TV tonight, the latest world news, sports news and ITV also has a kids corner with jokes and the like. Teletext is like a big electronic newspaper. You can read its pages on your TV but you can't write back to it.

The other method of communication is over the telephone. This is what systems like Micronet 800 use. This way, the computer can send messages and you can also type back. There are loads of computers which

you can dial into and most of them are free except for the price of the phone call. However, these free bulletin boards, as they're called, run on different baud rates (no pun intended) to Micronet so unfortunately you can't use a Micronet adaptor to call them. You can buy a 300 baud modem quite

cheaply from various companies, like Maplin Electronics who supply units for the Dragon, Vic-20, Commodore 64, Atari and Spectrum.

I tested the Atari one and managed to dial into some local systems and also used Maplin's own service called Cashtel which allows you to order stuff from the Maplin catalogue via your computer

by typing in your credit card number. A lot of computer clubs run bulletin boards, and you can dial them up for computing news; you can also send messages to the club by typing at your computer. This is the two-way advantage gained by using the 'phone as opposed to the airwayes.

You can set up your own bulletin board with a Maplin modern, but you'll also need some software.

You will soon be able to buy a Micronet/Prestel type modem for your BBC micro from Acorn which has some better features than the Micronet package. But it's more expensive, and you'll still have to pay a fee to join Micronet if you want to look at their private areas on the database.

You can also buy slightly cheaper moderns like the Micro-Myte which will not receive Micronet or other information systems, but will allow you to talk to your friend's computers, providing he or she also has a similar modem.

This way you can send each other programs or messages, but you'll have to phone him up first to tell him to switch his modem on!

The Micronet modems offer this person-to-person facility as well as normal Micronet use, but are slightly more exnensivo

STORAGE DEVICES

When you finally decide that cassettes are too slow for your needs, you'll want to look for something faster. The best thing is a real disc drive which for micros will probably use 5.25" discs.

A cheaper alternative is a 3" drive which is available for many micros. You can buy a Byte Drive 500 3" system from ITL for about £250, and this contains a special cable to link the drive to your micro.

If you have two computers, or decide to change your machine, you just buy a new cable. Blank 5" discs start at about £1.50, but 3" systems use special car-

You can now fit two standard Atari-type pysticks to your pectrum with an face 2. It plugs to the back of the computer, and also has a slot to take the new Sindair software cartridges. The BBC (below) can now become a Teletext terminal with the new add-on from Acorn. As well as displaying pages of information, it can also store the data in memory and use it in its own programs



At long last, the microdrive has actually been launched Ar expected, dem still exceeding supply and it will be some time before ou can just walk into Smiths and buy one. They're not really disc drives at all, just miniature cassette recorders. You can load a 16K program from a Microdrive in ab 10 seconds.







The byte-drive 500 is a 3" disc drive from ITL. The small discs are endosed in rigid plastic and currently rost over £5 each. The dever part is the cable which links the drive to the micro. This contains all the electronics, so if you ange micros, you just change the cable but keep the same

drive.

tridges which are currently about £6.

The Byte Drive 500 will soon be available for the Dragon, Spectrum and Commodore 64. It is already available for the Oric, BBC and Apple.

If you have a Spectrum, the official Sinclair way of progressing from cassette is the Microdrive. This costs £50 for each drive, but you'll also need an interface which is another £30. You can store between 85 and 100k on a Microdrive cartridge, and a 16k program will load in about 10 seconds

Microdrives are fast, but they're not really discs. Inside a microdrive cartridge is a loop of high quality tape, and the drive itself is just a very accurate (supposedly) cassette recorder.

If you've got a BBC then you'll need a disc interface fitted, which costs around £90. ITL has no intention at the moment of producing one, so you'll have to use the BBC one

MORE MEMORY

in the right place.

The size of the largest program which you can fit into your machine is governed by the size of the area of memory

in which the computer stores it. The problem is that although memory chips are now quite cheap, some micros still have very little RAM, as it's called. One of the first enhancements

which a computer owner will make in such a case is a memory expansion. The ZX81 although very popular has only 1k of RAM. (1k is about two

screenloads of program.) It's very easy to expand your ZX81's memory. You can buy a 16k RAM pack which just plugs into the back of the machine and costs around £30. You may have heard of the much-feared contemporary disease known as "RAM pack wobble", caused by Sinclair not putting the edge connector on their RAM pack

This disease can be fatal to a program, as a slight wobble at the wrong time can erase a whole afternoon's typing. One cure is a blob of something sticky under the machine, although a less messy solution is to look to a different company. You can also get 64k RAM packs which allow for even more torage of data and programs

Upgrades for the 16k Spectrum are available from Sinclair for £40, but you'll have to send your machine back to Clive, and you know how long that takes, don't you? Alternatively, you can buy a ZX81-like RAM pack which sits on the back of the machine, or some companies sell chips which you can stick inside, as long as you didn't really want the quarantee anyway.

If you're going to upgrade your Spectrum, check that the company's product will fit your particular machine. There are currently three different versions of the Spectrum in circulation and although they all look the same from the outside, there are some small variations inside which may make a difference.

Expansion for an Atari is easy; the memory comes in chunks of plastic which you install by removing the cover on top of the machine. Newer machines come with 48k but some old 400's still have only 16k. Your local dealer should be able to tell you how to improve this.

To expand a Texas T199/4 or 4a you'll need a peripheral expansion box. This takes the form of a large aluminium crate about the size of the small freezer compartment in a fridge. (I don't know why, but everyone seems to measure the size of computers in relation to parts

of fridges.) Inside this you can then put disc drives, memory expansions and anything else. Retail price for the box alone was around £80 but that may drop now that the Texas micro is no longer being

Memory expansion on a Vic is peculiar. It is in the form of plug-in cartridges and comes in four flavours, which are 3k 8k 16k or 32k

The annoving thing is that because the cartridge overwrites that part of memory which used to hold the contents of the screen, the screen RAM is moved to a different place.

The problem is that each cartridge puts it somewhere different, so programs written for use with an extra 3k will not necessarily run directly on a 16k machine without minor alterations. This is very inconvenient, especially for magazines who publish program list-

If you're tired of having to do octopus impressions to play your favourite computer game a joystick interface is called for. This allows machines which normally have no provision for such a gadget to have one, and very useful they are

The most popular machine, which lacks a joystick interface, is the Spectrum, and there are now quite a few companies who will remedy this situation for you.

The official way is by use of the Sinclair Interface 2. This costs just under £20 - you get 5p change! - and allows two standard Atari-type controllers to be used. You can then write your own games using the joysticks to control the

ROGRAMMABLE

SK MARTINE 32.95 £1QOpp

ABOUT OUR INTERFACE

The AG1 Programmable Joystick Interface in ridge, with the Sinclair Spectrum or ZX81.

The interface does not interfere with key operation and can therefore be used simul-taneously with the keyboard.

AGF means that your own programs can use eight directional joystick movement by

utilising simple key reading measts. Two joystick sockets are provided which share the same keys, for use with the majority of two player games. Several interfaces may be used on the same computer for multiple joystick applications.

multiple joystick applications. The interface is programmed by a two digit code, which is looked up on a programming chart supplied, for each direction and friend button. The two numbers are the descreted on a pair of leads which are clipped onto appropriately numbered strips on the interface.

Once configured this can be marked on a Quick Reference Programming Card for

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Accepts Atari, Competition Pro, Wico, Starfighter, Quick Shot, Le Stick etc.

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- Programmable Interface Module as illus-
- Self adhesive programming chart detailing
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action, or buy commercial software written for use with the device. Interface 2 also allows you to use plug-in cartridge software, although these retail at £15 a time

The problem with all the different joystick interfaces is that they use their own systems. So a program written for use with a Kempston joystick will not run on an Interface 2 unless the program contains a routine for each and you are allowed to select which one you

One way round this predicament is by a programmable joystick interface. Such a beast is the one from AGF. This comes with a grid of small holes and a

set of five wires

The wires are labelled with the functions of the joystick (up, down, left, right and fire) and the holes are labelled with the keys on a Spectrum keyboard. If the game which you want to play uses the K key to fire, then you plug the FIRE lead into the 'K' hole and so on. Such a device is very useful.

BETTER KEYBOARDS

When you finally tire of the piece of dead flesh known as your Spectrum's keyboard, there are a number of better ones around. The best are quite expensive at around £40 but they allow the whole machine to fit inside and look rather smart. One of the most popular around is made by Fuller. Kempston is also about to launch a high quality

keyboard for the Spectrum, as demonstrated recently at the ZX Microfair. You'll also find replace-

ments for the touch-sensitive keyboard of the Atari 400 from about £65.

If you have an Atari VCS and feel like getting into computing, you can now buy an add-on keyboard from Vulcan Electronics, which is made by Spectravideo. It sits on top of the VCS and plugs into the joystick ports and the main cartridge slot and you can then program your VCS in Basic. It costs £50.

Mattel Intellivision owners can also do the same to their machine. Mattel offers a similar device, as well as a music keyboard to enable you to compose music on your machine. I don't reckon Bach would think much of it, but it's not bad.

ABITS!



SOUNDS AND SPEECH

If your idea of a good evening is being locked in a quiet room with a micro, then you could always get more friendly with it by talking to it or having it talk to you. But before those nice little men in white coats come to take you away, let me explain

If you have a Pet, Vic, 64, Spectrum, ZX81 or BBC and need someone to talk to you then you could always try a Chatterbox. This costs £49 from William Stuart systems and you can program it to say anything you like. From the same company comes Big Ears which, for another £49, reverses the process and allows you to speak to your computer.

Say the word through the microphone a few times, and the machine will then remember it. If you then say it again, it should recognise what you're saying

If it's a Spectrum you've got then the Currah microspeech is another possibility besides a Chatterbox. It works on the same system and sells for under £30.

BBC owners can also choose the official Acorn speech system, which is a computerised version of Kenneth Kendall. Personally I can just about recognise him, but many say that it might just as well be Moira Stuart. (In fact. I wish it was.)

If you prefer noise to plain speech then there are a couple of units available to improve the sound of a Spectrum by providing it with the same sound chip as the BBC and Oric.

WHAT'S LEFT OVER

Finally, we come to the rest of the oddments which space did not allow separate headings for.

If you own an Aquarius, then this year should see the introduction of the home controller unit. This plugs into the machine and allows you to control household appliances by using special plugs which go into the wall and receive messages from the computer. Such a system is also planned for the Electron.

If you have an Atari VCS then you may already know about the super expander. This lets you load games from cassette, and also improves the quality of the graphics slightly.



Printerface is a mixture of interface and printer and is a device to let you link a printer to a micro. DAMS office systems supplies an IEEE cartridge to allow a Vic or 64 to connect to any Commodore printer (or disc drive for that matter.)

The Spectrum will only work with a ZX printer, but you can use the RS232 connection on an Interface 1 to link a large range of printers. If you have a Centronics-type printer then Kempston will supply you with a suitable interface for a Spectrum.

If you own a computer other than a Sinclair machine but would be perfectly happy to use a cheap (£40) Sinclair printer, you can get a suitable interface for many popular micros, including the BBC, Dragon and Vic, from Microtanic Computer Systems of London.

LIGHT SENSORS

Another way of controlling a game is with a light sensing device. Usually mounted in a pen-like barrel (and, therefore, called a light pen) these allow you to draw patterns on the screen as though it were a piece of paper.

Recently launched is the Light Rifle from Stack Systems of Bootle. Mersevside. It comes with three demo games where you have to shoot at targets on screen, just like those old TV game machines, but these games are better as they rely on all the facilities of the micro. You can also write your own shooting-time programs. The light rifle costs just under £30 and versions are available for the Spectrum, Vic and 64.

C & VG SOFTWARE FORN

Have you written a games program which you feel is just you send us, including the cassette itself, right for C&VG? If so we have come up with a form to ensure that we can test it out and give you our views on it, as quickly as possible.

We would prefer a tape and listing but can work from just a tape and will return it to you if it doesn't find its way into the magazine. We will also need an additional sheet explaining the game and its theme. And any documentation like lists of variables or how certain routines are working, would be of great help to beginners. Please make sure that could win our Programmer of the Year Contest where we will your name, address and the program name is on everything try to turn the winner into a best-selling games author.

Program name.

This form will merely help us to keep a check on your game as it goes through our testing process and make sure we have all the information we need to present it properly in

the magazine. If you don't want to cut up the magazine, we will accept photocopies or close copies of this page. This form will be

appearing regularly in C&VG issues from now on Remember we pay £10 for each listing published and you

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GRAPHICS

By Garry Marshall

MAKING THE MOST OF YOUR 64

Over the next few issues, I shall h looking at the graphics capabilities of the Commodore 64. This new computer has very impressive graphics facilities, which I'll be helping you make the most of.

I'll begin by looking at the way that user-defined characters are created. In fact, the entire keyboard is "soft" in the sense that it is possible to redefine the character that is associated with every key.

This is possible because the Commodore 64 really does have 64k of random-access memory. All the ROM, including the Basic ROM, the operating system ROM and the character generation ROM, is covered by RAM, so that ROMs can be switched out and the range of characters that they provide supplied instead by RAM.

Because of this, the characters that are stored in the character generator and printed from the keyboard can be copied from the character generator ROM into RAM so that all the characters are available when this ROM is disabled.

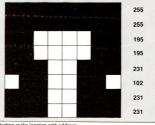
Then we can change the characters associated with any key as we wish. To write the program to do this, all we need to know is the addresses of the registers that control the operations involved

The characters themselves are based on an 8x8 dot matrix. Each dot can be on or off, and the resulting character is defined by using a 1 for a dot that is on and a 0 for a dot that is off. Then each row of the character is represented by the decimal equivalent of the binary number for the whole row. This is illustrated in figure 1.

In this way, we could design a completely new style for each letter of the alphabet or a set of graphics characters for a particular application.

The program I shall give allows the character in the illustration to be assigned to the key associated with any letter of the alphabet to that, when that key is pressed, it gives this character rather than the letter.

The program starts by setting the contents of location 53272 to make the video chip take character descriptions from the area of RAM



starting at the location with address 12288, rather than from the character ROM

Line 20 prevents this area of RAM from being overwritten by a Basic program. Then lines 30 and 40 permit the character ROM to be assessed so that its contents can be copied into RAM with lines 50 to 70

Lines 80 and 90 then return the computer to its original state. Lines 100 and 110 request that a letter is entered from the keyboard, accept an input and check that it is a letter before allowing control to pass to the remainder of the program which assigns the character in the illustration to the key for that letter.

If you run the program, you will notice that all occurrences of the letter on the screen are replaced by the graphics character straight away. This is because the screen refresh circuitry now refers to the area of RAM prescribed by the program rather than the character ROM for character descriptions. Also, of course, pressing the key for the letter given to the program now gives our character rather than the letter itself. The program can be used as the basis of a scheme for changing the characters associated with any and every key on the keyboard.

More on the Commodore 64's interesting graphics capabilities in the next issue.

The program is: 10 POKE 53272,(PEEK(53272)

AND 240) + 12 20 POKE 52.48: POKE 56.48: CLR 30 POKE

56334,PEEK(56334) **AND 254**

40 POKE 1, PEEK(1) **AND 251** 50 FOR K=0 TO 2047

60 POKE K+12288 PEEK(K+53248) 70 NEXT K

80 POKE 1.PEEK(1) OR 90 POKE

56334,PEEK(56334) 100 INPUT "LETTER":

110 I+ASC(L\$)-64: IF (I<1) OR (I>26) THEN

120 FOR N=0 TO 7 130 READ X: POKE 12288+8*I+N X

140 NEXT N 150 DATA 255, 255, 195,

160 DATA 231, 102, 231,

COMMODORE 64



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	COMMODORE 64	DRAGON 32		BBC B	Welcome to our revampe Charts page. The page which	:h
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I spy with my little eye something beginning with C&VG! Yes, it's next month's reader friendly magazine all ready to banish the post-Christmas

blues And have we got some surprises espionage, agents, double agents, triple agents and even quadruple agents - if we can learn to spell it in

Watch out for the front cover with a James Bond touch - and the special free gift. We're not telling you just what the gift is yet - who knows the KGB might be listening in, or the CIA might have this typewriter bug-

The man behind the Seventh Empire and our amazing 3D programs, Mike Singleton, has come up moderated board game!

Mike will be supplying the programs - and C&VG will be bringing you the world - well a map of it anyway — so you can muster your intelligence forces and beat your evil opponents. A big full-colour man board will be found splashed across the centre of our next issue and there will also be a computer overlay to help you play the game - plus that special secret free gift!

Demand for this special issue is bound to be high - so why not place an advance order with your newsagent now - but beware he might be a Masterspy!

you next month? You bet! For Spectrum owners we delve into the magic of 3D graphic once again - but you won't need the special glasses this time! It's a 3D maze game written by Henry Wright for the 48k Spectrum.

For the Commodore 64 we've got a graphic adventure-style game called Centre Crystal. Go on a guest for the lost crystal in this multi-screen game. Texas owners can catch up with the Scramble craze with our arcadestrike. There's more warlike action for Vic owners in Minefield. Out in the desert lurks a tank commander blasting away at enemy planes and tanks - could it be you?

medieval times with Wall Defence Can you protect your castle from stealthy enemies?

Go for gold on the Dragon 32 in Gold Prospector. Climb a building to reach the gold - but watch out for Sharp owners who like to take a

gamble will enjoy Slot Machine - an accurate representation of those - but this one will only cost you the

price of this magazine. There will be other listings too -

We take Atari 400 owners back to

So it looks like the now infamous

Seventh Empire gremlins have pulled out all the stops to get their claws into the Empire in its dying stages. But rest assured Empire freaks, we will resurrect the office Pet in time for the next issue when we WILL announce the overall winner of this interstellar conflict.

Anyway, for now we'll just have to grovel and apologise for the Pet. Now where did I put that baseball bat. I'll give it Christmas spirit. . . .

.

This here's my newsagent

but we're keeping those secret. So agent on February 16th and grab a

copy of Computer and Video Games! THE EMPIRE

As you may have already guessed the Seventh Empire is missing from the pages of this issue. What's the

Well, it's like this you see. There we were, happily feeding our office Pet the Empire instructions for the final move, when all of a sudden it says: "Look, everyone else is having a good time getting ready for Christmas and you are expecting me to got relatives too, you know. And I've got to get a present for my little Vic 20. With that, its screen went blank and we couldn't raise even the smalMe'n my newsagent are real close. Anyway we got an arrangement.

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